

SEPTEMBER 3, 1914

MOTOR AGE

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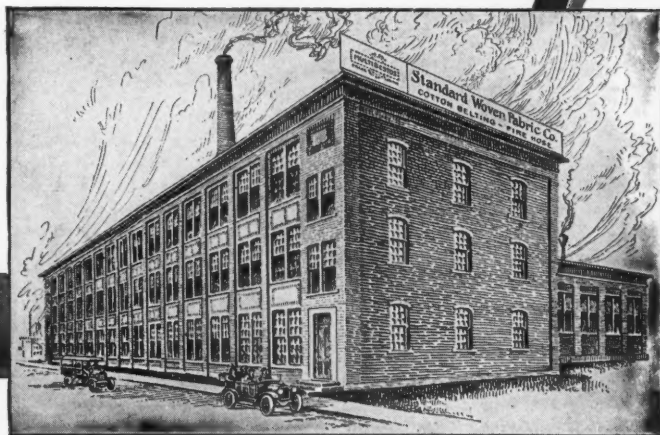
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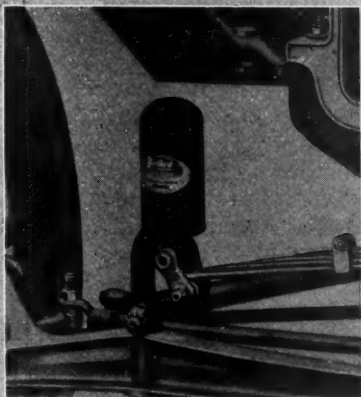
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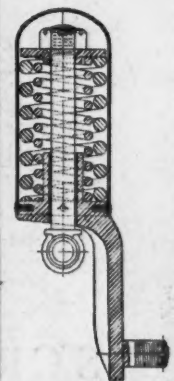
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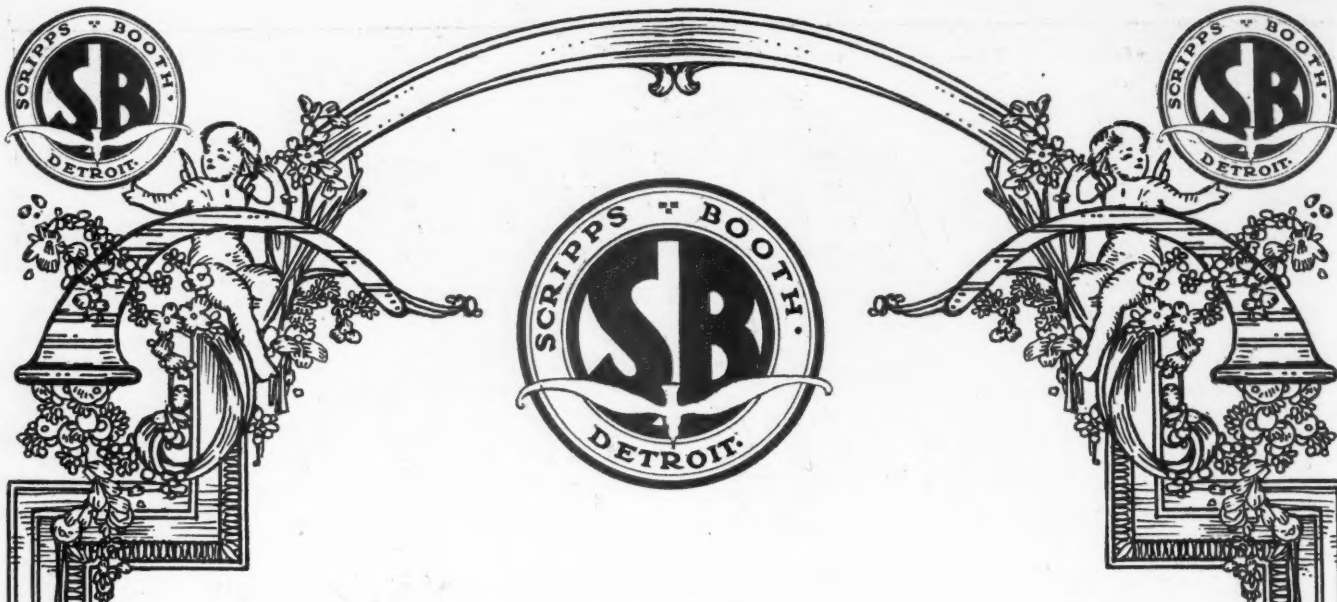
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134v



MOTOR AGE



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Volume XXVI

September 3, 1914

No. 10

C o n t e n t s

| | |
|---|----|
| FRANCE IN WAR TIME..... | 5 |
| W. F. Bradley reports stirring scenes following call to arms—Car factories closed—Power of gasoline recognized by army officials—Difficulties of travel | |
| WHITE OWNERS FINISH LONG TOUR..... | 12 |
| Manhattan, Kas., motorists see sights of Colorado—Cover 1500 miles | |
| NO MATERIAL INCREASE IN TIRE PRICES..... | 13 |
| Goodyear buys big stock of rubber | |
| EDITORIAL—MOBILIZING BY MOTOR—SOLVING USED-CAR PROBLEM | 14 |
| POEM—THE DESERT | 15 |
| LATE HAPPENINGS IN MOTOR INDUSTRY..... | 16 |
| Both Krit and Stutz announce new models—Chalmers reduces list on small six | |
| STANDARDIZING USED-CAR VALUES..... | 18 |
| How Chicago is solving the second-hand problem | |
| MOTOR CAR DEVELOPMENT..... | 26 |
| Description of new Haynes, Jackson, Monarch and Pilgrim | |
| INDEX TO ADVERTISEMENTS..... | 98 |

DEPARTMENTS

| | |
|-----------------------------------|-----------------------------------|
| Routes and Touring Information 20 | From the Four Winds..... 40 |
| Motor Car Repair Shop..... 23 | Coming Motor Events..... 40 |
| Readers' Clearing House..... 24 | Among Makers and Dealers.... 41 |
| Realm of Commercial Car..... 36 | Recent Incorporations..... 41 |
| The Accessory Corner..... 38 | Brief Business Announcements.. 42 |

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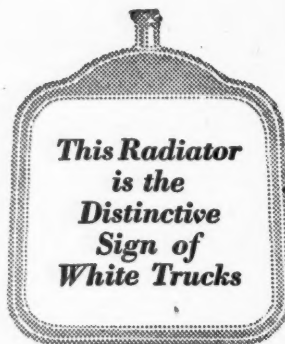
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MOTOR AGE



FRENCH MOTOR CARS PARKED ON THE ESPLANADE DES INVALIDES, PARIS, TO BE REQUISITIONED FOR ARMY SERVICE

France In War Time

W. F. Bradley Reports Stirring Scenes Following Call to Arms—Car Factories Closed—Power of Gasoline Recognized by Army Officials—Difficulties of Travel

EDITOR'S NOTE—First-hand information as to what the motor car is doing in the European war so far as France is concerned will be found in the following article from the pen of W. F. Bradley, Motor Age's French correspondent. Mr. Bradley will be remembered as manager of the French racing team at the 500-mile race at Indianapolis, a man who is thoroughly in touch with European motoring matters and who now is at the front.

By W. F. Bradley

PARIS, Aug. 11—At 4:30 o'clock on the afternoon of August 2 a small unimportant looking poster was posted on the walls of every public building in France announcing a general mobilization. Instantly the life of the nation was transformed. In the great motoring district around Paris machinery was stopped, workmen laid down the tools they were using and within 5 minutes were on their way to the railroad depot.

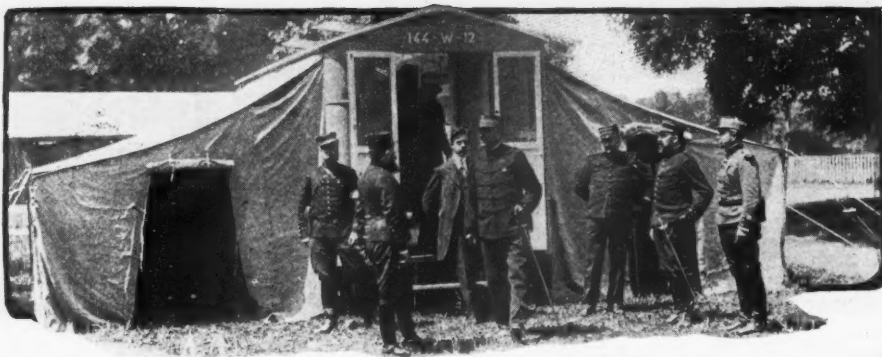
This call to arms automatically shut down the motor car factories. The Delage factory, which normally employs 1,000 men, had but forty left when the army had been satisfied; these forty comprised the least useful units. All the heads of departments, being young men, had gone on the first day. The Darracq factory,

which is run under English management, was left with its managers but with no workmen; every able-bodied man under 48 years of age joined the troops at the call of the government.

Within an hour of the issuing of the mobilization order another decree went forth forbidding the export of motor cars and parts. Thus, if the factories had been able to work, they would not have been able to get rid of their produce. All motor cars on the railroad in course of shipment abroad were put onto sidings and will remain there until the war is over. Most of the cars for England are sent unpacked, while chassis always are exported with no other protection than a layer of grease. These machines are all laid up in railroad depots or on the docks, without any pro-



Thomas, winner of the last Indianapolis race, now French army aviator, and Rigal and Bollot, now driving for French generals



THE MOTOR CAR HOSPITAL USED BY FRENCH ARMY

tection whatever and will suffer considerable damage.

There were a few exceptions to the closing of the factories. When work could be done for the army the military authorities took over the establishment, or such portion of it as they required, placed the staff under military law and required them to work for the government. All factories producing aeroplane motors came under this heading. The Gnome aeroplane motor works was the first to be militarized; the aeroplane motor section of the Renault works were treated in the same way; Le Rhone, Anzani, Canton-Unne and Clement Bayard works were militarized. The portion of the de Dion-Bouton factory building trucks and army searchlights continued at work for the army only.

The same applied to the Panhard-Levassor factory, to the Schneider works at Creusot, where, in addition to heavy artillery the Paris motor buses are produced, and to the Latil factory.

Answering the Call

Within 10 minutes of the issuing of the mobilization order, subsidized motor lorries belonging to the big dry goods stores in Paris were being driven away by military reservists. Within an hour of the order going forth there was not a motor bus on the streets of Paris. The Paris General Omnibus Co., which holds a monopoly of this service, has 1,000 buses, of which 900 are constantly in service. As soon as the order was up, the drivers continued the journey they were making, then ran for the central depot. Here the buses were transformed by taking out the seats and windows and fitting fine wire gauze screens. The rails for strap hangers received meat hooks, and with this transformation, which occupied but a few hours, the vehicles were ready to move to the front. This work was admirably carried out; in most cases the drivers were eligible for military service and remained with their vehicles.

The buses were divided into groups of

about a dozen, and as all the units in the group are of one type spare parts could be reduced to a minimum. Absolute secrecy is observed regarding military movements, the journalists who publish information



MOTOR CAR WIRELESS TELEGRAPHIC OUTFIT

likely to be of use to the enemy being eligible for court martial, yet it is possible to state that the conversion of the motor buses into meat wagons was carried out

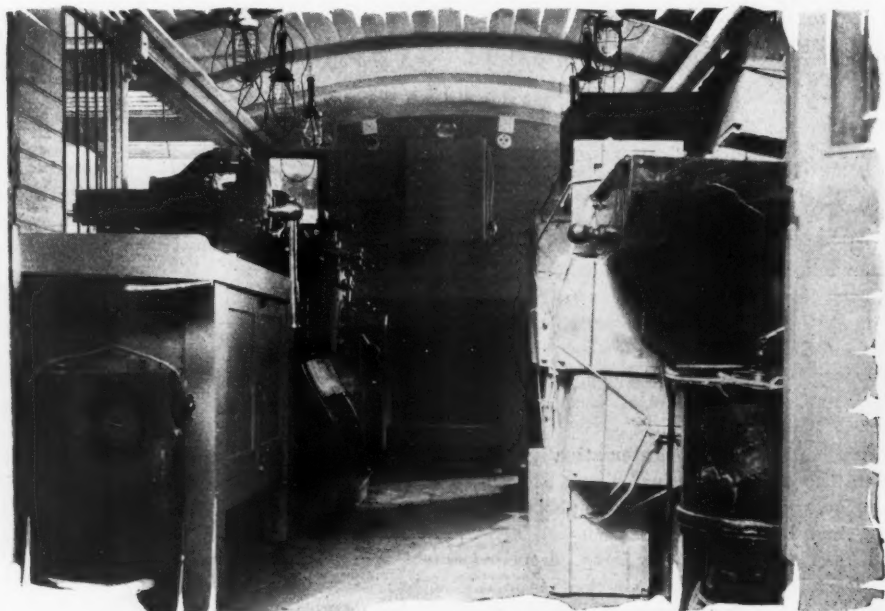
with remarkable celerity and that many of these vehicles are at the present time serving with the French troops in Belgium. They made the journey from Paris to Belgium by road.

Conserving Fuel Supply

With the taking over of the Paris omnibuses went the company's reserve supply of fuel and also all their sources of supply. To meet any emergencies, a reserve of several hundred thousands of gallons of benzol is maintained in the underground tanks of the company's depots at Paris. Now that the troops have moved forward this reserve doubtless will be transferred to a more easterly town, for the buses will operate from a town towards the east of France, carrying meat daily to the troops on the fighting line.

The use of motor vehicles in the French army is enormous. Figures are not available at the present moment; they could not be published if they were available. All the trucks under the army subsidy scheme have been called up. Under this scheme manufacturers are encouraged to build 2½ and 3-ton trucks conforming to certain general lines, and can sell these to users with the guarantee of a government subsidy on condition that they are maintained in full working order and are presented for inspection when required.

The 1914 competition for the 1915 models was in progress when the war broke out; immediately the vehicles were put into active service. While they are of varying makes and types, there is all the necessary uniformity about these subsidized vehicles to fit them for military



INTERIOR VIEW OF MOTOR CAR WIRELESS OUTFIT

service. They have a platform type body with a canvas top on hoops, these hoops being sufficiently strong to receive hammocks for wounded soldiers. If this type of body cannot be used in the owner's business, it must be kept in reserve and presented at the periodic inspections.

Subsidy Scheme Explained

All trucks under the subsidy scheme must have been built in French shops under French management. A foreign firm established in France is not eligible to supply trucks. All accessories, such as magnetos, tires, carbureters, etc., must be of French construction. Considerable work has been done in the unification of these organs, with the result that magnetos are interchangeable from one make of truck to another; the same applies to carbureters and tires. All trucks in the French army are gasoline type, but are capable of using three fuels—gasoline, benzol and alcohol—without any modification. This makes them proof against any shortage of the fuel supply.

Four-wheel drive tractors, which have been carefully developed during the last 2 years, will come into active service for the first time. The majority of these vehicles have been built by Panhard, other makers being Latil, Renault and Schneider. These tractors are hauling the 155-millimeter guns, together with their necessary ammunition and are also being employed for hauling provisions on trailers. If the manoeuvres can be taken as any indication of their value, they will render good service in this war. They can travel over any kind of country, for they



PANHARD TRACTOR HAULING FRENCH GUNS

have been tested over the most difficult land on the German frontier, while their capacity is much greater and their speed much higher than that of any horse ve-

hicle. class from light trucks carrying partially dismantled aeroplanes to what are practically ordinary touring cars fitted up to give first aid to disabled flying machines.



MOTOR CAR WORKSHOP CLOSED FOR TRAVELING

Aeroplanes work in escadrilles, each one consisting of seven or eight machines, and having a determined number of attached motor cars. In the important centers a traveling workshop is employed. This is a gasoline motor car with a van body containing a dynamo, a lathe, drills, band saws, a forge, etc., of such a complete nature that practically any repair can be carried out.

All the staff officers make use of private touring cars, the preferred type of machine being a five-passenger fast open car. Practically all these machines

have been taken from private service, the

men who are driving them being reservists. Large numbers of motor cars are being used in conjunction with the flying brigade. These machines are a varied

In this category are numbers of the leading French race drivers. Georges Boillot was called up just before the declaration of war and with a fast Peugeot was given the task of driving General Joffre, chief of the French army. Victor Rigal, with a similar type of car, was attached to another general. Jules Goux's indicated post was in a fort at Belfort, practically within a stone's throw of German territory. He took up this position immediately he was called, although he might have been incorporated in the aeroplane corps if he had made application. Albert Guyot joined his corps at Orleans, where it is understood that he was given the task of driving an officer. His regiment was immediately ordered to the front and no news is available concerning it. Guyot also is eligible for duty as an air scout.

Thomas Now an Aviator

Rene Thomas, winner of the Indianapolis race, never was accepted for military training, owing to his various accidents in motorcycle races. On the outbreak of war he volunteered for aeroplane service and has been accepted in this branch of the army. Arthur Duray, being of Belgian



WORKSHOP FOR REPAIRING MOTOR CARS AND AEROPLANES

origin, left for his home country on the outbreak of war and is believed to be serving with the troops against the Germans.

Motor touring in France, and indeed throughout the whole of continental Europe, is an utter impossibility. France has been declared in a state of siege, thus putting the whole of the authority in the

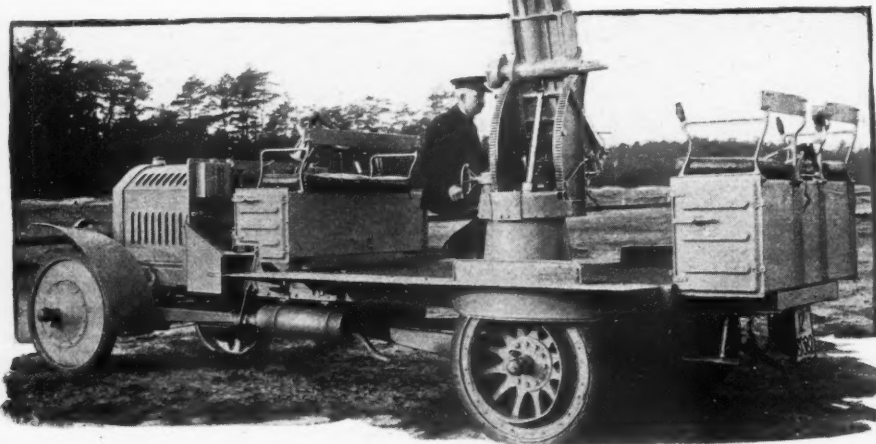
or under every railway, at every bridge over a river, the same close scrutiny took place. At 7:50 o'clock every person had to be off the road, the guards having orders to fire on every person traveling after that

Germans and Austrians were given 24 hours to get out of the country or be made prisoners; other foreigners had to leave the country within the same period or comply with stringent police regulations. On the expiration of this period foreigners could only leave the country with a special permit. The only means of escape for American motorists was by the channel ports to England. Many a party raced across France with the hope of reaching Dieppe, Havre, Boulogne, or Calais before the expiration of the first day of mobilization. After driving in many cases for 18 to 20 hours without a stop and without a break for food, it was found that the car could not be taken abroad, for at the same time as the expulsion notice was given an order went into force immediately forbidding the exportation of motor cars.

Even if this law had not been in force, the cross-channel boats were so crowded that it was an utter impossibility to get cars aboard. The outbreak of the war coincided with the English bank holiday period, when thousands of Britishers invaded the French coast with no thought of war. These people had to get out of the country by midnight of August 2, when all ordinary boat service with England was cut off. Boats which normally carried a thousand passengers took on three times that number; women dropped on the decks and laid where they had dropped.

Tourists' Cars Are Abandoned

Motorists, unwilling to believe that the laws were drastic, moved along the coast from Havre to Dieppe, from Dieppe to Boulogne, and from Boulogne to Calais, only to find themselves at midnight on a pier with crowds of casual visitors fighting for a place on a boat and willing to abandon all their baggage if they could get out of the country. In the town of Dieppe alone sixty English and American cars were left behind; along this coast it is estimated that 300 foreign cars were abandoned. Most of the owners had the forethought to place their cars in a reliable garage, from which they could withdraw them after the war, if not requisitioned



TYPE OF GERMAN GUN USED FOR WRECKING AIRSHIPS

hands of the military. It is impossible for any person to use a motor car in Paris unless provided with a permit from the police. To travel outside Paris a special permit must be secured from the war department. This permit bears the photograph of the holder and must be shown at every request of the authorities.

Military Passes for Tourists

I have just traveled from Dieppe to Paris, a distance of about 130 miles. On starting out the Dieppe authorities provided me with a pass which had to be presented to the chief of police in every town where I stayed more than 6 hours, and had to be given up for examination when requested. The first request came about 7 miles out of Dieppe. A couple of soldiers carrying rifles with fixed bayonets, barred the road and asked for my papers. After they had been carefully examined I was allowed to continue. At the entrance and exit to every village, at the passage over

hour. My own pass gave me the right to travel to Paris only; before another journey can be made a fresh pass must be secured indicating the route to be followed. This system makes it possible to keep a close control of all cars.

As soon as war was declared, French subjects who were eligible for military service but were not in the motor corps had to bring their cars for inspection. Many of these machines were commandeered. Others, having no military obligations, had to obtain a special military pass before they could use their cars, and by reason of this application they were brought in contact with the authorities, who thus obtained the assurance that the cars were in running order, and only consented to issue the pass if a guarantee was given that the cars could be obtained for army purposes when required.

American motorists touring in France were badly hit on the outbreak of the war.



DAIMLER MOTOR TRAIN AS USED IN GERMAN ARMY

in the meantime. Others waited until the last minute, then abandoned their cars in the public square. A few, thinking only of their own safety, told the chauffeur to do the best he could, and as soon as the owners had made for the boat, carrying their own baggage, the chauffeur left the car in the street and fought his way aboard.

At Dieppe I saw two Packard cars abandoned on the quayside; a French car owned by Americans also had been left behind, the chauffeur not even taking the trouble to stop the motor. I saw this car at 7 o'clock in the evening; when the last boat went out soon after midnight the motor still was running. When the foreigners had departed the French author-

ities collected these abandoned cars; some have gone into active service with the troops; others can be claimed after the war.

SCHEIDER FOUR-WHEEL DRIVE TRACTOR IN OPERATION

ities collected these abandoned cars; some have gone into active service with the troops; others can be claimed after the war.

Troubles of Americans

One scene on the boat was typical of many. Two American families which had been touring together with a couple of powerful American cars had driven 400 miles without a break. They had left their heavy baggage behind in the south of France. When they reached the coast it was to find that all their wealth could not purchase a passage for their cars. Money, too, could not secure the services of a porter to put their hand baggage aboard, and it was only with such things as they could carry themselves that they were able to get on the boat for England. Once aboard the women were hysterical; the men maintained a gloomy silence.

French families were as hard hit as the foreigners. Thousands of motorists were staying on the Normandy and Brittany coasts, 120 to 200 miles from Paris. With the mobilization order the entire railroad service went into the hands of the military; passengers were carried if there was room for them, but no heavy baggage would be handled. As one, two, and some-

times three members of a family had to leave for the front within 24 hours, it was necessary to get back to Paris without a moment's delay. In very many cases open touring cars were decked over, piled up with trunks to a height of 6 feet, and the chauffeur told to make for Paris as quickly as possible. The family followed in a second car, if they possessed one, or trusted to the train service.

In other cases a contrary movement took place. Timid persons imagined that safety lay in getting as far away from Paris as possible, and cars were loaded far beyond their capacity to take passengers and their belongings to some distant corner of Brittany. The motor traffic on the roads during the first day of mobilization was intense. Now that all the troops have been moved towards the east the roads west of Paris are deserted. It is possible to travel a whole day and not meet a dozen cars. Eastward, on the other hand, the movement is intense, but is entirely of a military nature.

Paris traffic is confined to motor cars carrying officers. There is not a single motor bus in the city; three-quarters of the taxicabs have been withdrawn owing to the departure of their drivers for the front. Within the city limits traffic regu-

lations are normal, but no motor car is allowed to go out of the city without a military pass and no car can be on the roads outside Paris later than 7:30 p. m.

With very rare exceptions the motor stores in Paris are closed. The German firms, Continental, Mercedes, Benz, Opel, etc., have taken the precaution to remove all their signs in order to prevent the wreckage of their buildings. There were a few popular outbreaks against Germans on the declaration of war, although no motor car firms were attacked. Since then the authorities have taken all necessary precautions to prevent rioting, for these patriotic outbursts gave an opportunity to the criminal class to work for their own ends. A civil guard has been instituted and big sight-seeing motor cars are maintained at the police headquarters to carry police to the scene of any disturbance which may be reported with the least possible delay. So strong is the feeling against Germany that it is almost a foregone conclusion that German cars, accessory and tire firms will be unable to do business in France for many years to come. The leading firms are Mercedes, Benz, Continental and Bosch. All these establishments are now closed and it is doubtful if they will open again when peace is declared.

Tommy Atkins Appreciates the Motor

England Goes to War on Pneumatic Tires

TOMMY ATKINS, shouldering a musket instead of swinging a swagger stick, has formed an alliance with the motor car and in impending battles to be fought by British troopers, there will be frantic calls for Gunga Dins that carry gasoline tanks instead of water bags.

This is the information that comes from across the Atlantic, information that is contained in the latest English motoring magazines to be received in this country—the Light Car and Cyclecar of August 17 and the Motor of August 11.

In fact it seems that all Europe is going forth to war on pneumatic tires and not upon horse or foot as it did a century ago when the armies of England, Prussia, Austria and Russia fought shoulder to

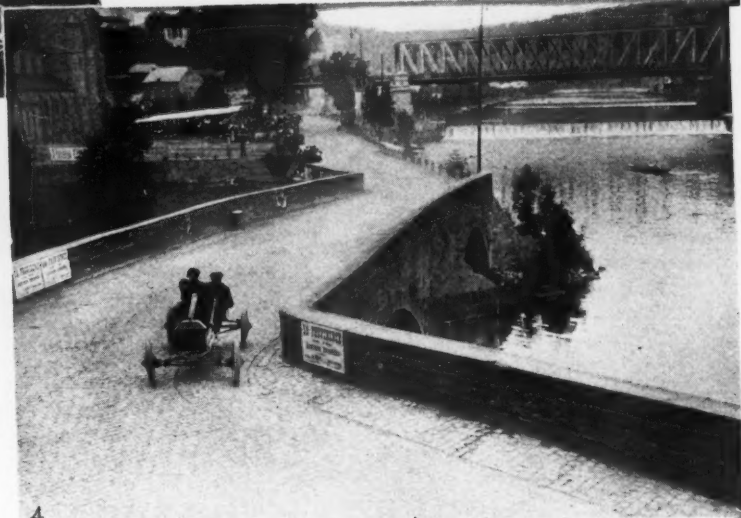
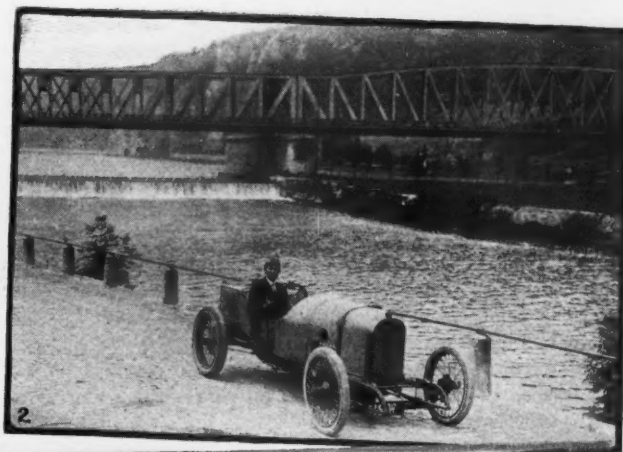
shoulder to wreck Napoleon's ambitions and to punish the Child of Destiny for his colossal arrogance and repudiated treaties.

According to the Light Car and Cyclecar 12,000 motor cars have been placed at the disposal of the war office by the Royal Automobile Club alone and with such a monster motorecade ready for service, English army officials can move at least 60,000 soldiers and their kits at a speed ten or twenty times as rapid as is possible with the ordinary horse equipment.

"The unequalled facilities which exist in England for the concentration of large quantities of motor vehicles of all kinds have rendered it an easy matter for the government to commandeer or impress



STEAM TRACTORS COMMANDEERED FOR SERVICE IN FRENCH ARMY



FORMER EUROPEAN MOTOR HAUNTS NOW BATTLEFIELDS

1—French, Belgian and German motor cars at Dinant, Belgium, on occasion of last Belgian grand prix. Fierce fighting now is taking place at this point. 2—Anseremme on the Meuse; photograph taken during the last Belgian grand prix; now scene of fighting between Belgians and Germans. 3—Opel team at Dinant, Belgium. Some of these men now are fighting here against French and Belgian troops. 4—Jules Goux at Anseremme, where battles have since been fought

whatever machines it requires," says the Motor. "On Wednesday last, for instance, the mechanical transport committee of the war office established its headquarters in Broad Walk, Kensington Gardens, and with only a few hours' notice collected by means of its inspection officers, armed with the necessary government warrants, a mixed fleet of very considerable dimensions, and these included new Sunbeam touring cars, W. and G. taxicabs with their taximeters dismantled, brand new Daimler limousines and a number of Thornycroft, Straker, Daimler and other heavy lorries.

Mobilizing Motor Lorries

"One of the most remarkable instances of the preparedness on the part of industrial vehicle owners to meet the urgent requisition of the government was evidence by the mobilization of Waring's complete fleet of aviation-type subsidy lorries with its team of special reserve drivers. These 3-ton machines, all identical in type, at the time of the receipt of the requisition order from the war office, were all over the country delivering furniture. They were recalled by telegraph, paraded during the afternoon of Wednesday, and left for a certain depot Wednesday evening, completely equipped."

Motor car dealers were prompt in offering cars to the war office and the Motor says that the agents of Scotland have volunteered to contribute more than 1,100 vehicles to the government.

In a double-page advertisement the Motor appeals to the motorists of Great Britain to provide accommodation at their homes for wounded combatants and to use their cars for the conveyance of the wounded to private homes and hospitals and to carry medical stores and supplies.

According to the English papers, several of the motor car factories have been taken over by the government and the employees now are busy building transport wagons. One company, financed by English capital and recently organized to build the Taunton car, selected as its factory site the city of Liege, the Belgian center around which the war ranged on the march of the Germans toward France. The officers have yet to learn whether the plant is in ruins. In the meantime, they have placed the factory at the disposal of the Belgian government for use as a hospital.

Should the war continue for more than a year, England will face a fuel famine that may result in motorists being forced to walk instead of ride because of the scarcity of gasoline.

Speaking of the effects of the war on motoring, the Motor says: "The first and most direct and immediate effect must undoubtedly be a rise in the price of petrol and other motor fuels, and most probably—nay, indeed, certainly if the war continues more than a few weeks—an absolute and serious shortage in the supply. With the exception of benzole and the small quantities of spirit distilled from the Scotch shales, we are entirely dependent for our liquid fuel supplies upon foreign countries, and we have to consider not only the position in the principal producing countries, as induced by the war but also the effect of conditions of war upon transportation.

Scarcity of Fuel

"The principal fuel producing countries of Europe are Russia, Roumania and Austria, and, of course, all supplies from the latter country can be ruled out, so far as we are concerned, as, before they reach us, they have to pass through the territory of the two former countries with whom Austria is at war. Roumania, I see to-day has notified her intention of supporting Russia and Serbia. So far as the Russian oilfields are concerned, a huge general strike amongst the workers has been in progress for some weeks, and production

has been stopped, but the outbreak of the war and the calling up of the reserves has stopped the strike. Both Russia and Roumania, however, being at war themselves, will doubtless embargo the supplies for Government uses, which will create a very considerable shortage in the supplies usually drawn upon by us.

"We do not get all our fuel supplies from the fields in the east of Europe by any means, and if we can only get hold of the supplies which are available from other fields, the shortage is not likely to be great. But here the fear of possibilities in the way of capture will rule as a great deterrent to shipment."

According to the statisticians, the motorists of the British Isles use 2,000,000 gallons of gasoline and benzole weekly and there is sufficient supply of these fuels to last for several months. The motoring magazines caution their readers not to hoard gasoline and to keep the tanks in circulation because a scarcity of tanks will result in a raise in price.

Owners of foreign cars in England will not suffer from a lack of spare parts as a result of the war for the London agents for French, German and Italian machines report that they are in a position to meet the ordinary demand. Many dealers in foreign cars have several cars for sale and the English motorist who is partial to a French or Italian machine can gratify his whim.

According to the Motor, Germany was preparing for the war as far back as June when the London agent for the Parsons non-skid chain received an order from Germany for several thousand sets of the device. The chains were to be held until asked for. The day before war was declared, a telegram was received demanding the urgent despatch of the chains and a duplication of the order. The Motor also is authority for the statement that all the cars produced by the Mathis company have been impressed for the German army.

WORK ESCAPES FROM EUROPE

Akron, O., Aug. 29—President B. G. Work, of the B. F. Goodrich Co., arrived home Thursday, after a 2-months' trip abroad. While at Frankfort, Germany, where he was forced to remain for a week, he witnessed a thrilling encounter between a French aeroplane and three German rapid-fire guns. The German authorities commandeered the touring car in which Mr. and Mrs. Work were driving and it will be held until the close of the war. Mr. Work says the war will have a noticeable effect on the rubber industry. He said that practically all the crude rubber brought into this country is handled through English brokers who will be able to supply the manufacturers. All European rubber manufacturing plants have been taken over by the government. The Goodrich plant in France is in the control of the government and on a war footing.

John N. Willys Escapes from War Net

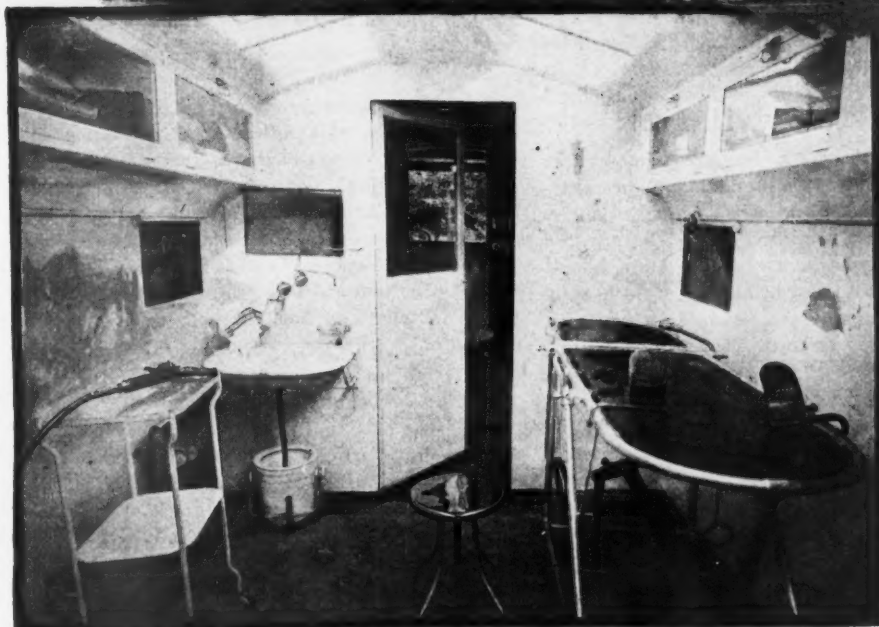
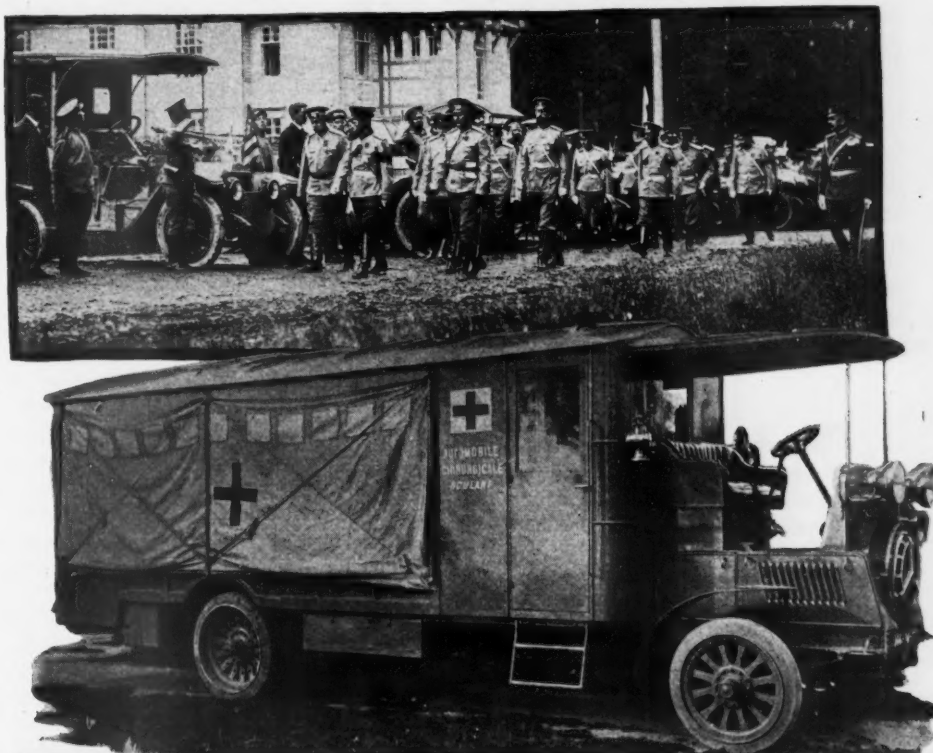
Overland Maker Tells of European Experiences

TOLEDO, O., Sept. 1—John N. Willys, president of the Willys-Overland company, one of the many caught in Europe in the war net, is home again, having crossed the Atlantic in the White Star liner Olympic, which arrived in New York Saturday morning.

With Mrs. Willys and their young daughter, Mr. Willys was starting a motor tour on the continent when the impending trouble forced them to abandon their plans

and take refuge in England. Their escape from the seat of trouble was accomplished only after the loss of the greater part of their baggage and their new car which was seized by the French soldiers.

"Although the Belgians are at present massed at Antwerp, it is believed that as soon as the Germans start their southern and western march the Belgians will make themselves felt," says Mr. Willys. "Their war department purchased 200 Overland



Top illustration shows Russian troops and the czar. The photograph was taken a year ago when the czar inspected White motor trucks which government had just bought. The middle illustration shows an exterior view of a German motor hospital. The lower illustration shows an interior view of the hospital

cars to be used in transporting their troops.

"All of the other nations involved in the war are using motor cars for transporting troops, supplies and ammunition: For years France and Germany have been subsidizing the majority of motor trucks built in their own factories, and England was known to have a large number of army motor cars, but in spite of these elaborate precautions, the big armies in the field today are in dire need of additional motor equipment.

"All of the war departments are eager to obtain as many motor cars as possible for the use of their troops. While I was in London our branch there sold and delivered twenty-two Overland touring cars to the English war department in 1 day for use in patrolling and defending the coast. Immediately upon receipt of the cars, the territorials chopped off the tonneaus and mounted Maxim guns on the rear of the chassis.

"When the mobilization of French soldiers started we were in Paris and immediately made plans to forestall possible difficulties by giving up the motor tour of Europe which we had proposed taking and making for England.

"When we arrived in Dieppe we found the town entirely deserted save for women and children and a few old men who were unable to bear arms. All business has been suspended. The proprietor of the hotel at which we stopped, with his entire corps of chefs and waiters, had responded to the call to arms.

"It was with great difficulty that we obtained accommodations on the boat which took us to England. Just as we were going to take our motor car, which we had used less than a week, aboard the boat, it was seized by the French military authorities, who commandeered it for their own use. Many other American tourists suffered the same loss. There are practically no motor cars operated by private individuals in Europe today."

CANADA BUYS WAR TRUCKS

Montreal, Aug. 29—The militia department of the Canadian government has supplied itself with motor trucks with the least possible delay. The government has purchased twenty-five, the idea being to have these trucks, all of 2-ton capacity, accompany the Canadian contingent abroad, there to be utilized for the hauling of supplies and other work which heretofore has been done with horses. The details of the purchase were handed over to T. A. Russell of the Russell Motor Car Co., of Toronto, by the militia department, and the following manufacturers received the orders:

The Russell Motor Car Co., of Toronto, eight; White Co., Cleveland, five; Packard company, four; Gramm, Walkerville, four; and the Reo, four, twenty-five in all. A stipulation of the orders was quick delivery. White received the order Sunday and delivered Tuesday.

White Owners Finish Their Long Tour

Kansans See Sights of Colorado

MANHATTAN, Kas., Aug. 31—The seventy motorists who participated in the White tour from this city to Colorado Springs and return, finished their 1,500-mile journey here Saturday after being 12 days on the road. There were seventeen cars in the party—all Whites, and the tourists had a most enjoyable outing as a result of the expedition that was organized by S. W. Forrester, the White dealer in Manhattan.

The tourists drove west across Kansas, over the famous Golden Belt route to Colorado. After touring Colorado and visiting such points as Estes park, Lookout mountain, Garden of the Gods, Seven Falls, Royal Gorge and the Sky-Line drive, they proceeded to Pueblo, and returned to Manhattan over the historic Santa Fe trail.

Although complete camping outfits were carried on each car, the entrants did not pitch camp every night, as nothing in the rules of the tour prevented them from patronizing hotels whenever they desired. However, in a great many of the smaller Kansas towns the hotels would not accommodate such a large party and as the weather was beautiful for camping, almost every night the entire party slept in tents. To carry tents, excess baggage and an extra supply of tires, a White 1,500-pound delivery truck accompanied the tourists.

Starting from Manhattan early in the morning on August 17, the first day's run took the tourists 180 miles to Hays, Kas., passing through Abilene, Salina, Ellsworth and Russell. The next day the route was somewhat longer — 195 miles — passing through Waukena, Oakley and Colby, to Burlington, Colo. It was planned to make a run of 219 miles to Seibert, but owing to the fact that a rain preceded the tourists by several hours and the roads were slippery between Burlington and Seibert, it was decided to stay in Burlington. Although this mileage seems extraordinary for pleasure cars, the roads through western Kansas are as level as a floor and as hard as macadam this time of the year, so that no trouble was expected in covering this distance. On the third day a run of 165 miles took the tourists through Seibert, Limon and Bennett, to Denver.

At Denver a half day was spent in resting, as a great many of the owners were not used to such continuous driving, and the only trip that was planned on the first day in Colorado was a ride to Lookout mountain. This is a short route from Denver and is a new drive. It is one of the most beautiful drives that it is possible to take out of Denver, and compares very favorably with the famous Sky-Line Drive at Canon City.

The next day Estes park was visited and the tourists received their first experience in real mountain driving. The trip up Big Thompson canon to Estes park

was one that will not soon be forgotten by the tourists and the trip down the other road leading to Estes park, known as the Lyons' road, is equally as picturesque.

From Denver the tourists went to Colorado Springs, visiting the many points of interest around that city and Manitou, and some of the party made the drive to Cripple Creek and Victor and return. The following day they drove to Canon City and to the top of the Royal Gorge, on the famous Sky-Line drive and the Tunnel drive.

After driving to Pueblo, the return trip was made through La Junta and Lamar, striking the historic Santa Fe trail at La Junta, and proceeding to Lamar, where the night's stop was made. The next day they drove to Dodge City and the following day to Great Bend. The final run to Manhattan was made on August 29, arriving here in practically the same condition as when the cars left.

WISCONSIN TAKES CAR CENSUS

Milwaukee, Wis., Aug. 31—Thirty-six per cent of the 50,000 odd motor cars owned in Wisconsin belong to farmers, while 64 per cent are in the hands of persons living within the limits of incorporated cities and villages, according to a compilation made by Ex-Governor W. D. Hoard, editor of Hoard's Dairyman, Fort Atkinson, Wis. The basis of the calculation is the schedule of assessors in forty-one counties in Wisconsin which are considered agricultural districts, and does not include Milwaukee county because of the preponderance of city population over rural population, which is in the ratio of 97 to 3. Governor Hoard's figures show that one city family in every twelve and one farm family in every twenty-two owns a motor car. In Milwaukee county the ratio is one to sixteen city families and one to fifteen farm families. The richest farm county from the standpoint of number of cars is Walworth, in which one farmer in every nine owns a machine. The number of machines has a close relation to farm values. In Walworth county, for instance, farms have an average value of \$13,000, while in a northern county like Shawano, where there is one machine to each thirty-seven farms, the average farm value is \$6,000.

FIRE IN OLD MIDLAND PLANT

Moline, Ill., Aug. 29—Fire damaged the plant of the Midland Motor Car Co. in East Moline to the extent of \$15,000. The company now is defunct and the plant is in the hands of creditors. The principal loss was to seventy motor car frames which were stored in the destroyed building. Heroic work by firemen saved the plant.

No Material Changes in Tire Prices

Goodyear Gets Big Rubber Supply

NEW YORK, Aug. 31—Tire prices have undergone no material changes this week. The Pennsylvania Tire Co. announces an increase in the price on its vacuum tire of 5 per cent and an increase of 12½ per cent on its plain tread casings.

Those tire prices which remain the same as before the war are as follows: Kelly-Springfield, Lee, McGraw, Michelin, Overman, Goodyear, Ten Broeck and Swinehart. The following tire prices are increased: Empire, 12½ per cent; Federal, 12½ per cent; Firestone, 12½ per cent; Fisk, 15 per cent; Goodrich and Diamond, 12½ per cent; Pennsylvania, 12½ per cent; Republic, 12½ per cent; United States, 12½ per cent, and the Lee, 12½ per cent.

The Goodyear Tire and Rubber Co. has obtained 1,500,000 pounds of rubber from the London market. This big supply is now nearly all on the way to the factory in Akron. The company has since taken other steps to insure a continuous supply.

Several other companies have succeeded in getting a small lot of rubber, but the lack of ocean transportation facilities has greatly hindered them in getting even this small lot.

The demoralization of the foreign exchange market is giving fully as much trouble. As is well known, the principal sources from which crude rubber are obtained are Brazil and the far east. In both cases the product is paid for through London. Unless the foreign exchange market improves substantially in the near future the buying of crude rubber will be on a reduced scale.

BENHAM COMPANY DISSOLVING

Detroit, Mich., Sept. 2—Special telegram—A voluntary petition for dissolution has been made by the Benham Mfg. Co., Detroit, which has been making the Benham six-cylinder cars and which was formerly known as the S. and M. The petition was made upon the suggestion of the creditors' committee and the Union Trust Co. has been appointed receiver and will decide after verification of the concern's conditions and the inventory what the best policy will be concerning the future of the Benham company. According to the latter's statement, the liabilities amount to \$76,889 and the assets to \$109,000.

POSTAL CONTRACT CANCELLED

Milwaukee, Wis., Aug. 31.—An unwarranted blow to motor vehicles in the postal service is discerned in the action of the postoffice department at Washington in nullifying its contract with the Johnson Service Co., Milwaukee, for postal collection by motor car, and substituting motorcycle vans. The change, which is effective October 15, is particularly disliked in Mil-

waukee because the idea of motor postal service had its inception here 6 years ago, but the fact that the idea is not entirely abandoned and the service will still be by motor, forms some little consolation.

Ralph Bird, assistant postmaster, explains that the change is solely for the betterment of the service. "If the experiment proves satisfactory, motorcycles will be used all over the United States. We will use three machines in Milwaukee. These cycle-vans have attained an average speed of 14 seconds to collect mail from one box. Motorcycle trucks now are being used extensively in the delivery and collection service for small packages and if the experiment in the postal service is successful another large field is opened to them."

AMATEURS WIN TEAM MATCH

Chicago, Aug. 31.—The fourth annual team match between amateur and trade members of the Chicago Motor Club for the A. J. Banta trophy took place Friday and Saturday of last week and resulted in a victory for the amateur team by a score of 181 for the victors and 251 for the losers. The trip was to St. Joe, Mich., and return, a journey of about 210 miles. The amateur team was made up of six cars, while the trade team had the same number. On the winning side L. H. Phifer in a Volie, O. W. Hahn in an Overland and E. Turner in a Mercer made perfect scores. Captain J. Frank Meyer in a Ford drew 178 points, while L. M. Barr in a Peugeot was docked 1. On the losing side the clean scores were made by R. C. Cook in a Stearns-Knight and John D. O'Connor in a Buick. John A. Bell in a White and F. E. Sparks in an Overland each drew 1 point. B. McSteele in a Scripps-Booth was the chief offender, drawing 222 points the first day.

WISCONSIN TOUR POSTPONED

Milwaukee, Wis., Aug. 31.—The fourth annual tour of the Wisconsin State A. A., scheduled for September 2, 3 and 4, has been postponed to September 7, 8 and 9 so that the run may start on Labor day and contestants will actually spend only 2 working days on the road. When entries closed August 27, there were eight actual entries and five conditional entries, depending upon the arrival of 1915 models. To accommodate the uncertain entrants, the tour was set forward 5 days, and in the meantime additional entries will be solicited. The cars already officially nominated are: Mitchell, Mitchell Automobile Co., Milwaukee; Franklin, Sanger Automobile Co., Milwaukee; Chevrolet, Olson-Pauly Co., Manitowish, Wis.; Buick, Buick Motor Co., Milwaukee; Studebaker, Wol-

leager Automobile Co., Milwaukee; new R. C. H., Creek Motor Sales Co., Milwaukee; White, White Automobile Co., Milwaukee; Oakland, Creek Motor Sales Co.; Reo V, Curtis Automobile Co., Milwaukee; Jeffery 4, Reeke-Osmond Motor Car Co., Milwaukee.

DETROIT BAN LIFTED

Detroit, Mich., Aug. 31.—The chairman of the contest board of the American Automobile Association has informed the promoters of the 2-days race meet to be held on the Michigan state fair track September 6 and 7, that the ban upon the track has been lifted for those 2 days in order that the drivers may fulfill their contracts made before an unsanctioned meet was run off on the track.

In connection with the fair itself one of the attractions will be the motor car exhibition. According to Manager Walter Wilmot, the following cars will be on display: Abbott, Briggs-Detroit, Cartecar, Chevrolet, Dodge Motor Car Co. car, Buick, Detroit electric, Ford, C. J. Fischer, Hudson, Krit, Oldsmobile, Hupmobile, Mitchell, Haynes, Grant, Maxwell, Imperial, Studebaker, Regal, Overland, Jackson, Paterson, Premier, Oakland and the Denby and Republic trucks.

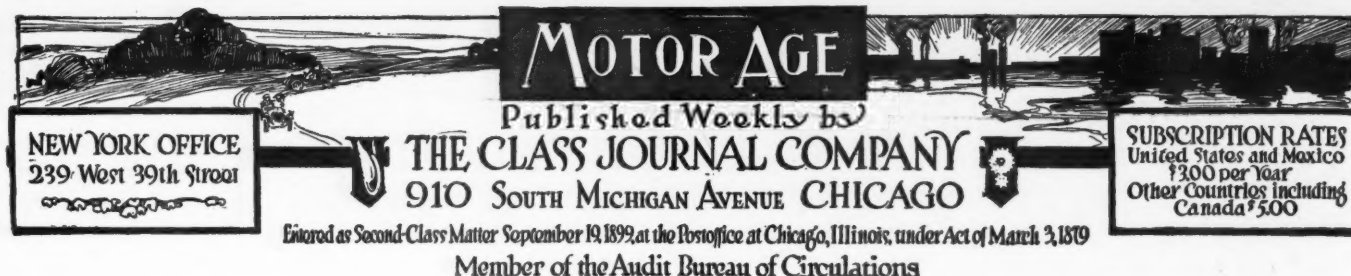
USEFUL GARAGE WARNING SIGNAL

Denver, Col., Aug. 29.—A Colorado mechanical genius has made an important contribution to the Safety First crusade now taking a grip on the entire country. He is M. H. McCormick, an expert motor car mechanic connected with the Mark-sheffel garage in Colorado Springs.

Visitors who have gone into the Mark-sheffel garage with their cars have been startled by hearing a Klaxon blast when they went in or out of the place, and have looked around for the reason.

The reason is McCormick. When Mark-sheffel was building his big white garage, McCormick installed an electric safety signal system for which he has applied for patents. It consists of three iron plates and an electrical contact system. One plate is set in the sidewalk outside the garage and two are inside. The system is so built that a car, striking the outside plate, causes the door to lift and also sounds a Klaxon mounted at the top of the entrance, bringing the garage man to attention. About 8 feet inside he strikes another plate, which closes the door. There is a third plate which is ordinarily kept neutral, although it can be connected in a moment and made to perform the duties of the other two.

The same procedure noted about the car entering the garage prevails on those making exit. By the automatic sounding of the horn the pedestrian outside the garage is protected against accident or forgetfulness on the part of the driver and is warned to stop in plenty of time before the car gets outside the garage.



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Mobilizing by Motor

IF Napoleon Bonaparte should come to life today, that imperial figure of a century ago would rub his eyes in surprise and then crumple over with amazement. For in the last 100 years Mars has changed his tactics. He has borrowed the winged sandals of Mercury and now goes forth to slay men and lay waste to cities at a speed of which the First Consul of France never dreamed.

IN the greatest war the world has ever known, the red episode through which Europe is now passing, gasoline is playing as important a part as the lead from which bullets have been molded and the steel out of which bayonets and death-dealing field pieces have been forged. The motor car, commonly thought of as a vehicle of pleasure, suddenly has been converted into a transport for troops and is cast for no minor role in the tragedy of death and devastation that the militants of Europe are writing. "Get there in a hurry and strike first" is a military axiom that has sent troops on forced marches of terrible travail and lathered cavalry horses with sweat. Its strict and most supreme observance now has been made possible by an agent of which Miltiades, Alexander, Frederick the Great, Napoleon, Wellington, Lee and Grant and other great warriors of the past knew nothing. That agent is the motor car, first recruited for the task of mobilization in the present European war and proving its efficiency at the very outset of the colossal struggle.

THAT France placed much dependence on the motor car for mobilization purposes is evidenced in the first article from the scene of fighting that appears in this issue of Motor Age. When war was declared and the intentions of the kaiser to invade the republic were known, France called upon the motor car to rush

her troops to central depots and thence to the frontier, where she hoped to check the German advance.

MOBILIZATION of troops, formerly taking weeks to accomplish, was done in a few days. The motor car made this possible. In the red game of war it proved an all-important factor. Traveling at speeds ten times greater than is possible with the ordinary horse equipment, it proved itself a wonderful aid to a nation in distress.

BELGIUM also called upon the motor car when the Teuton hordes first laid siege to the tiny kingdom. Even before war was declared, the Belgians commandeered practically every car that they could lay their hands on. Mobility was the essence of the Belgian success in meeting the terrific attack which Germany suddenly delivered upon her. Had not that gallant little nation the facilities to throw her full strength around Liege and the Meuse valley at the very outset, the story of the war to date might be very different and Paris might now be the prize of the kaiser's army. In praising the bravery of the Belgian troops, the motor car must not be overlooked. It was the motor car that accomplished the rapid mobilization and rushed to Liege the soldiers that so heroically held the Germans at bay.

IN the clash of all Europe, the motor car is cast for a more praiseworthy role than that of transporting armed men. It is being used to carry the wounded from the firing line to the field hospitals and in such humanitarian work it is saving many a life that would be sacrificed to Mars by getting victims to the surgeons at a speed far greater than is possible with horse-drawn ambulances.

Solving the Used-Car Problem

EVER since the first American motor car dealer took a used car in trade the second-hand problem has been with the industry and, like Sinbad's "Old Man of the Sea," has been clinging desperately to its shoulders. Dealers everywhere have recognized the dangers of this practice, and for more than a decade have been wrestling with the problem. Few have solved it, despite united efforts on the part of the tradesmen. We have had clearing houses which were designed to take in the used cars and sell them for the dealers at prices that have been set by an unbiased committee; we have witnessed dealers trying to stand pat and refuse to trade and we have heard of agents refusing to take in anything but cars they handle themselves. And, looking it over, we fail to discover anything that has been classed as successful by the trade at large, although of course there may have been some which have met with individual success.

NOW comes the Chicago Automobile Trade Association with its "Used-Car Central Market Report" which, even at this early stage, gives promise of coming closer to the bullseye than anything yet attempted. The scheme does not sell cars for the dealers, neither does it discover prospects, but it does give the dealer a clear and conclusive idea as to the market value of the

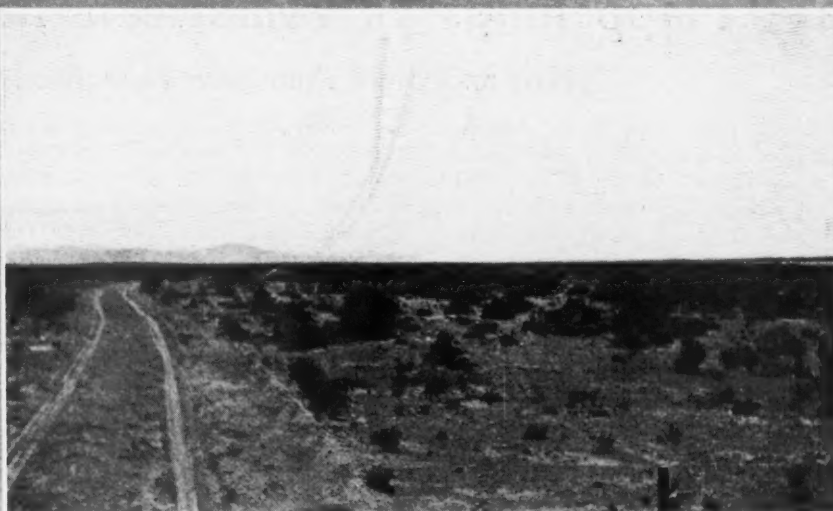
used car, and with this the dealer can work out his own salvation in a way that cannot help but be of benefit to him.

BUT such a scheme can be worked only by co-operation on the part of all the dealers in any one city, this co-operation coming in the shape of information as to what each man allows on a car. Then by averaging up these prices a fair average of what the trade at large should allow on each particular make and model can be secured. Chicago has hit the keynote by guarding the secrets of the dealers, which makes them willing to contribute what they can in the way of information. No agent wants his rival to know what prices he individually allows, but he is willing that this information be used if he can be protected. And the trade association does this by a system carefully worked out.

CHICAGO'S efforts along these lines are being watched by many other cities, as is shown by the demands for these quarterly reports, and it would not be surprising if this finally resulted in the compilation of a book, covering the entire country, which might be handled by some such organization as the National Automobile Chamber of Commerce. If that body could take up such a proposition and make good with it, it would be helping the industry in a manner that would be appreciated.

The Desert

by F.H. Trego



*Beside bleached bones, half buried in the sand,
He stands aghast in God's great wonderland,
The Desert, stretching out on ev'ry side
Without a hill where living thing might hide.*

*The heat waves rise as though to fling in air
A challenge to the fierce sun's blighting glare,
And bare earth shrivels, shrinks and fin'ly dies
Till nothing living breathes beneath such skies.*

*The stock is dead, the wagon's wheels are still,
And fear beats at his aching heart until
He stands in awe of might by God here shown
And on his knees he weakly bows him down.*

*The awful silence! oh! if he could hear
E'en sound so faint, it would be something near;
But vastness round him calmly waits his death,
Despairingly he groans each painful breath.*

*The devil, Thirst, has gripped his choking throat,
And with a laugh, he stands aside to note
The loss of reason when insanity
Shall drive the victim to eternity.*

*With startled eyes, he sees a lake of blue—
A phantom of his thirst—or is it true?
And stagg'ring, crawling o'er the burning sands,
He stops—he falls—he digs with both his hands*

*Dethroned mind says, "There's water here—keep on."
The man digs fast; the sand wears flesh from bone,
And as he stoops to drink with panting breath,
Dust fills his mouth and then—the clutch of Death.*

Model Highway Built Through Wisconsin Wilderness

Road-Making Under Great Difficulties

MILWAUKEE, Wis., Aug. 31.—It has remained for the northernmost and one of the least-populated counties in Wisconsin to be the first in this state to build a permanent highway across the territory and thus make an opening for the construction of a cross-state highway from Lake Superior to Lake Michigan, running from Ashland to Milwaukee, a distance of 375 miles. The county is that of Ashland, on the south shore of Lake Superior, and when the last ½ mile of macadam is O. K.'d by the state highway commission at the end of this week, a continuous cross-county highway 64 miles long will have been provided and motorists will find available a model road.

The Ashland county highway, which was built under the state-aid system, starts at the southern limits of the city of Ashland and traverses Ashland county diagonally in a southeasterly course, passing through the cities and villages of Marengo, Sanborn, Mellen, Cayuga,

Morse, Glidden and Butternut, to the northern limits of Sawyer county. The work cost \$165,000, of which sum the state bears one-third, Ashland county one-third, and the various townships traversed by the road the other third. Nearly one-third of the length of the highway was built through a virgin forest, where roads were merely Indian trails before the highway makers invaded the territory.

There were many other obstacles entering into the undertaking, the magnitude of which is indicated by the fact that dozens of wooden culverts had to be replaced by steel and concrete bridges; road building material, such as crushed stone and iron ore had to be shipped great distances; miles of temporary narrow-gauge track had to be laid to accommodate transportation of machinery, road rollers, etc., and the work prosecuted in the heart of some of the wildest country in Wisconsin.

The work was started by George E.

Foster, a millionaire lumberman of Mellen, who consented to act as county highway commissioner for 2 years and out of his own pocket gave several thousand dollars to make the project possible, retiring in April, 1914, after the completion of the work was assured, in favor of W. E. Dillon, who had been his chief assistant up to that time.

In fact, the idea of cross-county highway was conceived by Mr. Foster when he purchased his first car several years ago, and when it was delivered at the railroad station, was unable to negotiate any considerable distance out of Mellen because of the terrible road conditions. The route of the new road is one of the most beautiful in America, passing as it does through a beautiful lake country and through a section that is at once as wild as northern Canada but near enough to civilization to remove the dangers and hardships of travel in the wild and woolly north.

Late Happenings in American Motor Car Industry

Krit and Stutz Announce New Models for 1915

DETROIT, Mich., Sept. 1—To meet the demand for a low-priced small car for that portion of the buying public which does not care for the ultra refinements of detail and equipment that characterize the Krit 1915 models recently announced, the Krit Motor Car Co. has decided to bring out another model, to sell at \$850, with electric cranking and lighting.

This new Krit, designated as model O, has the same motor and chassis as the models selling at \$995, but it is less of a de luxe proposition, though it is just as good from the standpoint of service, it is claimed. The motor has a bore of 3 3/4 inches and a stroke of 4 inches, is rated at 30 horsepower, and is an L-head type, cylinders cast in a block.

Though the body is a streamline type, it is not so refined, has the familiar paneled edges which are absent on the other car, and is a strictly manufacturing proposition.

To illustrate the equipment differences, making possible this difference in price as compared with the other Krit, the top is not of the one-man type, though it is of a good grade of mohair; there is no gasoline tank gauge; the fenders are not crowned, though preserving the popular curve. The Bosch magneto is not fitted, the new Disco combination electrical system taking care of ignition as well as lighting and cranking. A Schebler carbureter probably will be used. This model O Krit possesses many high-priced car features, though. For instance, there is the coped-over radiator, tapered bonnet, left drive, rain-vision and ventilating windshield, leather-covered instrument board, Stewart speedometer, demountable rims and tire carrier at the rear, gas tank in the cowl.

It is probable that a large proportion of the Krit factory will be devoted to the making of this model, a schedule of about 6,000 of them being figured on. Due to the low price, this car is to be had only in stock form. No changes will be made in color, equipment or fittings. Both roadster and touring car are offered at \$850. Deliveries are under way, the first carload going forward today.

NEW SMALL FOUR STUTZ

Indianapolis, Ind., Aug. 31—A small four runabout selling at \$1,450 has been announced for 1915 by the Stutz Motor Car Co., Indianapolis, Ind. In addition, another 1915 model is the Bulldog, which consists of a close-coupled four-passenger tonneau on the standard four-cylinder Bearcat roadster. This car sells for \$2,250.

The new small four is standard in every way. It has a four-cylinder L-head block motor, 3.75 by 5 inches, made by the Wis-

consin company. A cone clutch and the Stutz gearset and rear axle, combined in one unit, are continued. The wheelbase is 108 inches, and 32 by 4-inch tires mounted on wooden wheels are used. The front axle is of Timken make and the springs are semi-elliptic all around. The Remy starting and lighting system has been adopted, and carburetion is furnished by a Stromberg carbureter.

Right steering and right control are used, the steering gear being a Gemmer. The equipment includes Hartford shock absorbers, Warner speedometer, Baker demountable rims, trunk and tire carrier, and the body is ironed for a top.

The Bulldog model is identical with the present Bearcat with the exception that Bosch ignition is used and the gravity tank has been displaced by a pressure system.

CHALMERS CUTS SMALL SIX LIST

Detroit, Mich., Sept. 2—Special telegram—The Chalmers Motor Car Co. yesterday reduced the price of its small six-cylinder model from \$1,850 to \$1,650. This cut of \$200 means a sheer reduction of this amount, the car at its new price being identical in every respect as previously sold. This price reduction brings this small six into the prize zone of small sixes the public has been observing closely for months past.

KEATON TIRE PLANT SOLD

New York, Aug. 31—The Keaton Tire and Rubber Co. has been taken over by the Combination Rubber Mfg. Co., this city, which will continue the manufacture of special brand tires and tubes and take over the business in its entirety. H. A. Forbes, formerly general manager of the Keaton company, now is connected with the Combination company as manager of its tire department, and F. C. Braden is now identified with the company as sales manager of the tire department.

TO MAKE POPE PARTS

Hartford, Conn., Sept. 2—Special telegram—Announcement is made today of the continuation of the manufacture of parts for Pope-Hartford pleasure cars, trucks and fire apparatus to be conducted in this city. The purchase of this business in its entirety by the Pope-Hartford Co. of Connecticut, the new corporation, includes all the parts finished and in process, tools, jigs, fixtures, patterns, drawings, tracings, formulas and everything pertaining to this important branch of the business.

Rumors have been current for some time that Western manufacturers have been negotiating for this part of the business. The business will be carried on in this city.

The repair and service department formerly operated by the Pope-Hartford company also will be continued by the new concern at the main works on Capitol avenue. This department will be managed by experts selected from the best men in the employ of the Pope Mfg. Co.

The Pope-Hartford Co. of Connecticut is composed of men who have been connected with the design, manufacture and sale of these cars since the production of the first model in 1902. The following are named as officers of the corporation: Wilbur C. Walker, president; Ralph A. Barkman, vice-president; Charles E. Walker, treasurer; Joseph A. Taylor, secretary.

The capital stock authorized is \$200,000, divided into 200 shares, par value \$100. There are \$60,000 of preferred stock and \$140,000 of common stock. The amount of capital stock with which the corporation intends to begin business is \$10,000. The incorporators are: W. C. Walker, Charles E. Walker, of Hartford, and Ralph A. Barkman, of West Hartford.

The Hartford Motor Car Co., of Hartford, Conn., has filed a certificate of incorporation. It purposes buying, selling and dealing in motor vehicles. The company is the Dodge representative in this section. The capital stock authorized is \$50,000, divided into 500 shares, par value \$100. The amount of capital stock with which the corporation intends to begin business is \$10,000. The incorporators are Frank M. Ridder, W. C. Walker, Charles E. Walker, of Hartford, and Ralph A. Barkman, of West Hartford.

SPLITDORF SUES EISEMANN

New York, Aug. 31—The Splitdorf Electrical Co. has brought suit against the Eisemann Magneto Co. charging infringement of patent No. 1,102,385, covering improvements in magneto mounting. The Splitdorf company is the assignee of Ernest W. Brackett, Newark, N. J., and claims that the Eisemann company made or sold or caused to be made or sold in the borough of Manhattan magneto mountings embodying the invention of the patent. The plaintiff prays for a writ of injunction, provisional as well as permanent, and also for damages and costs of the suit.

The Eisemann Magneto Co. claims that the so-called invention described in the patent was manufactured and marketed by others for some years before the granting of the patent in suit. The Eisemann company will contest the suit on this ground.

BOSCH NOT AFFECTED BY WAR

London, Eng., Aug. 31—Special cable—The Bosch Magneto Co. announces that it has supplies of magnetos available for all possible requirements. The plant is available if necessary for production.

Massachusetts Highway Commission Reports on Roads

Bay State Body Presents Interesting Figures

BOSTON, Mass., Aug. 31—The annual report of the Massachusetts highway commission has been issued containing the facts relative to roads and motor vehicles which interest road builders and motorists. It states that the total length of state highways now completed is 980.37 miles, of which mileage about 49.5 were completed last year. There has been expended on these roads since the work was first undertaken just \$9,288,143.35. This does not include the money spent by towns and cities.

The report states that for the past 3 years there has been a constant increasing interest on the part of city and town officials to secure good roads, and the commission has extended a great deal of aid to such officials. County officers also have done their share to increase the state mileage. About \$2,690,000 was available for maintenance and constructive work last year, and out of this much was accomplished in the way of resurfacing highways, strengthening bridges, etc. The commission feels that it needs more men for its engineering department, for it states "to increase from \$650,000 to more than \$3,000,000 for road expenditures in 5 years, without a corresponding increase in the working force, and to secure good results, certainly are worthy achievements for any office or any force."

The report states that the commission has continued its policy of making the main roads wider, usually building 18 feet of stone surface instead of 15 feet, which formerly was the standard width. It also has continued to use on such roads some bituminous binder and has been reducing the crown of the road 1 inch to the yard in width, not only to make the road less slippery, but also in order that the traffic will distribute itself over the whole width of the highway. This additional width and bituminous binder which now is necessary increase the cost of construction from 50 to 75 per cent. The 8-hour law and the workmen's compensation law also have largely increased the cost. The increase in traffic, particularly the motor trucks, is responsible for the increased width and cost of the highways now.

The commission has started experimental work on a sand and clay road in Gay Head under the direction of an engineer from Washington, and if it is found that it will stand up in winter, many more miles will be constructed on the south shore where there is an abundance of material, and because of the low cost of such highways.

The commission has done work in 222 cities and towns and \$287,000 was available for this work. The report states that what formerly were country roads now have become main highways because of

the adoption of motor vehicles for business and pleasure, and this has been the cause of a big expense for maintenance. Some of the state highways are 20 years old, but the average of all is about 10 years. While adequate for some years after they were constructed, they are too narrow now in some places, and are wearing out badly in others.

It will cost from \$8,000 to \$10,000 a mile for reconstruction, but the work must be planned far ahead and be done gradually, or in a few years many miles of state highway on the heavily-traveled routes will give out and go to pieces. The work should be planned and at least 100 miles a year done from now on so that at the end of 5 years at least 500 miles will be widened and reconstructed. The engineers estimate that at least \$3,000,000 is needed for the immediate widening and reconstruction of the through routes. The report states that some system of uniform traffic counts should be adopted from a formula that would give the weight or damage done by the different kinds of traffic, based on the weight per yard width per year, or per day, so that results may be compared.

Some of the facts connected with the motor car department are very interesting. It shows that out of 5,847 persons examined to drive motor vehicles 671 failed. In 1912, of 5,936 examined 347 failed, showing that the examiners are more strict, apparently, for almost all the failures were on the road test in handling vehicles. The commission brings out the fact that motor accidents are decreasing, showing that in Boston the figures for last year are about the same as the year before, while the teams and street cars accident figures have increased. The number of motor cars and trucks have greatly increased. There were 308 hearings last year to 289 the year before, and 608 licenses were suspended or revoked, while the year before 546 were dropped.

STANDARD R. B. CO. REORGANIZING

Philadelphia, Pa., Sept. 1.—In conjunction with manufacturing and banking interests in Philadelphia, New York and other cities in the east, S. S. Eveland, former president of the Standard Roller Bearing Co., which went into the hands of receivers last year, has plans well under way for a reorganization of the company. At the headquarters of the Eveland Engineering & Mfg. Co. it was announced today that Mr. Eveland was attending an important meeting bearing on the reorganization plan and hence it was not possible to get more than an outline of what was to be accomplished. The only information forthcoming was to the effect that a substantial payment to the creditors' committee had

been made to bind the bargain. It is understood that the company's plan of reorganization contemplates payment to the company of a large sum for working capital, and also the payment to creditors of a certain percentage of their claims, including holders, mercantile creditors and banks, the balance to be paid gradually, all stockholders to retain an interest in the concern.

CARLSON'S FAST ELGIN LAP

Chicago, Aug. 29—William Carlson, driving No. 23 Maxwell in the Elgin National trophy race last Saturday, made the second fastest lap of the day—6:27 in the twenty-seventh lap. This fact was overlooked in the recapitulation published on page 24 of Motor Age August 27.

RECEIVER FOR VOITURETTE CO

Detroit, Mich., Sept. 1.—The Detroit Trust Co. has been appointed receiver for the America Voiturette Co., of this city, builder of the Carnation small car and the Keeton car. H. L. Stanton, who is in charge of the receivership, states that all creditors are being notified by circular letter of the situation and that work will be immediately begun on making an inventory and issuing a statement of the assets and liabilities of the concern.

The order for the appointment of the receivership was signed by Judge Sessions, of Grand Rapids, and the receivership is in the United States district court, eastern district of Michigan, in equity. The application for the receivership was made by a creditor of the organization.

The American Voiturette Co. was one of the few concerns to bring out a satisfactory small car. Early in May the production was up to twenty-five cars per day and tents were used for assembling the machines, the factory not being large enough for the work. It is understood that as soon as the taking of inventory is completed that production will be continued under the receivership until a final adjustment of affairs has been made.

The receiver states that the liabilities, according to the company's statement, approximate \$231,000. No statement of assets is made, but there is material for 600 Carnation small cars on hand in various stages of construction and material for 100 Keeton cars. The receiver has been instructed to carry on manufacture of these parts as soon as the inventory is taken. Since April 1 the company has manufactured 1,200 Carnation cars and has distributed these through more than a dozen centers scattered over the entire country. A representative of the concern makes the statement that the narrow tread which has demonstrated its value on all kinds of roads has been criticized.

Standardizing Used-Car Values

How Chicago is Working Out the Second-Hand Problem

HARMONIOUS efforts on the part of the dealers and co-operation by everyone identified with the Chicago Automobile Trade Association have gone a long way toward solving the used-car problem in the central west and have established a quarterly report on values of machines taken in trade. Chicago has been made the used-car bourse and now dealers find available for their use a handy volume of reference which quotes the average price allowed by Chicago dealers, which may well be considered standard by agents not only in Chicago but in other cities as well.

The standardizing of used-car values seems to be a gigantic step forward and to have eliminated those time-worn propositions such as clearing houses and the like. The entire scheme is the idea of H. M. Allison, president of the Chicago Automobile Trade Association, and his directors, who have devoted considerable time to working out the problem.

In laying the foundation for the scheme, Allison took into consideration the natural feeling on the part of the dealers to making public the prices they allow on used cars. But, Allison figured, if these same dealers could be assured that their individual secrets would be protected, then it might be possible to get the average price by means of secret information, furnished the association without the identity of the concern being divulged. So the "Used-Car Central Market Report" came into being, which quotes the average prices allowed on more than 100 different makes of gasoline cars and fourteen makes of electrics. The information for this book was secured in the following manner:

Getting Average Values

Prices were obtained from Chicago dealers, and during the first 3 months of this year, January, February and March. Fig. 3 shows the blank form with which each member of the Chicago Automobile Trade Association is provided. This slip actually was made out by a dealer, no one knows who; it may have been the Buick dealer, or it may have been Overland, Studebaker, or any other dealer that took this model 28 1912 Buick in trade on a new car. After taking it in the Buick actually was sold for \$525.

The dealer who made this sale furnished the information to the dealers' association, but he did not have to sign his name to the blank form, in fact, there is not an indication on the form as to whom it was received from. The form is mailed to the dealers' association in a double envelope. It is first placed in a plain white envelope and sealed. This envelope, without address or any distinguishing mark, is placed

in an envelope furnished by the dealers' association, and on this outer envelope is a number which the trade association has assigned to the dealer. Each dealer has a different number, and one dealer does not know the number of the other. The confidential secretary of the association is the only one who knows the numbers of the various dealers and the only reason that the envelopes are numbered is that he will know what dealers have been assisting in furnishing the information.

Backbone of the System

These information blanks or sales slips are the real secret of the system. Before this scheme was evolved it was impossible for the dealers to get together. One mistrusted the other. One refused to tell the other what he allowed on a certain used car and what he actually sold it for. But with this secret sales slip scheme many dealers were at once sold to the proposition. They saw that although giving out the information they were yet keeping their business secrets, and not laying open their books to any rival dealer or to any association.

The "Used-Car Central Market Report" is a forty-page book with pages 10 to 7 inches. The book is filled from cover to cover with valuations of used cars. If you

are a dealer and a prospect wants to trade in a 1909 Chalmers model F 24-horsepower runabout, you can look up your central market report and see that the average sales for this car in trades has been \$325, and further that its value has been appraised by other dealers at \$320. So with twenty other Chalmers models any one of which you might have to take in trade; and so with an even hundred other makes of gasoline cars and besides these are fourteen different makes of electrics.

Fig. 1 is a specimen page taken from the first issue of the "Used-Car Central Market Report." It shows the valuation placed on used Packard cars. The first column gives the model, the second the year of its manufacture, the third its body type, whether roadster, touring or runabout. This is followed by passenger capacity, number of cylinders, horsepower calculated by S. A. E. or A. L. A. M. formulae and then comes the list price of the car when new. Next you come to the real information, the column headed "Allowance," which means what the dealer selling Packard cars is supposed to allow for the different models. Do not pay too much attention to this column, but pass on to the column marked "As Is." This column tells the real story, contains the informa-

USED CAR CENTRAL MARKET REPORT

PACKARD

Mfd. by Packard Motor Car Co., Detroit, Mich.

| Model | Year | Type | Pass. Capac. | Cyl. | H. P. | List Price | Allowance | Aver. Sale Price Last Quarter | | | Appraised Value As Is |
|-------|------|----------|--------------|------|-------|------------|-----------|-------------------------------|------------------|---------|-----------------------|
| | | | | | | | | As Is | Partial Overhaul | Rebuilt | |
| NA | 1909 | Rd.-Tr. | 2-5 | 4 | 18 | \$2200 | .... | \$ 650 | \$ 650 | .... | \$ 430 |
| UB | 1909 | Rd.-Tr. | 2-7 | 4 | 30 | 4200 | .... | 875 | .... | .... | 470 |
| NB | 1910 | Rbt. | 3 | 4 | 18 | 3200 | \$ 600 | .... | .... | .... | 520 |
| UC | 1910 | Tour. | 7 | 4 | 30 | 4200 | 750 | 975 | .... | .... | 640 |
| NC | 1911 | Rbt.-Tr. | 2-5 | 4 | 18 | 3200 | 800 | .... | .... | .... | 650 |
| UB | 1911 | Rd.-Tr. | 2-7 | 4 | 30 | 4200 | 1000 | .... | .... | .... | 850 |
| NE | 1912 | Rd.-Tr. | 5 | 4 | 40 | 4200 | 1400 | .... | .... | .... | 1070 |
| UE | 1912 | Rd.-Tr. | 2-7 | 4 | 36 | 3200 | 1000 | .... | .... | .... | 1190 |
| RE | 1912 | Rd.-Tr. | 2-7 | 6 | 48 | 5000 | 1600 | .... | .... | \$2100 | 1275 |
| 1348 | 1913 | Tour. | 7 | 6 | 48 | 4850 | 2100 | .... | 3000 | .... | 1775 |
| 1438 | 1913 | Rd.-Tr. | 2-5 | 6 | 38 | 4150 | .... | .... | 2700 | .... | 1615 |

FIG. 1—SPECIMEN PAGE SHOWING VALUATION ON PACKARDS

USED CARS CENTRAL MARKET REPORT

CHALMERS—Continued

| Model | Year | Type | Pass. Capac. | Cyl. | H. P. | List Price | Allowance | Aver. Sale Price Last Quarter | | | Appraised Value As Is |
|-------|------|-------------|--------------|------|-------|------------|-----------|-------------------------------|------------------|---------|-----------------------|
| | | | | | | | | As Is | Partial Overhaul | Rebuilt | |
| 10 | 1912 | Tour. | 5 | 4 | 36 | \$1800 | \$ 850 | \$ 680 | .... | .... | \$ 700 |
| 10 | 1912 | Rds. | 2 | 4 | 36 | 1900 | 850 | .... | .... | .... | 700 |
| 12 | 1912 | Tr.-B. Ton. | 3-5 | 6 | 54 | 3250 | 1100 | 875 | \$ 850 | .... | 1000 |
| 10 | 1912 | Tour. | 7 | 4 | 36 | 2000 | .... | .... | 900 | .... | 700 |
| 10 | 1912 | Tour. | 5 | 4 | 36 | 1900 | 850 | 700 | 805 | .... | 700 |
| 16 | 1913 | Tour.-Tor. | 4-5 | 4 | 30 | 1600 | 800 | .... | .... | .... | 700 |
| 17 | 1913 | Rd.-Tr. | 2-5 | 4 | 36 | 1950 | 900 | 850 | 970 | \$1050 | 800 |
| 17 | 1913 | Tour. | 7 | 4 | 36 | 2150 | .... | .... | .... | .... | 800 |
| 18 | 1913 | Rd.-Tr. | 2-5 | 6 | 54 | 2400 | 1250 | 1400 | .... | .... | 1100 |
| 18 | 1913 | Tour. | 7 | 6 | 54 | 2600 | 1250 | 1150 | 1300 | .... | 1100 |

FIG. 2—SAMPLE PAGE SHOWING CHALMERS VALUATION

tion you want. "As Is" means what these models have actually been sold for, after being taken in in trades. This figure does not mean what one car has sold for but it is the average of perhaps what a dozen used cars of this model have brought in the used car market. It is an average figure, not a high price that one particularly good used car may have sold for, but what ten, perhaps twenty have been again sold for.

After the "As is" column is another headed "Partial Overhaul" in which are given the figures these cars have actually sold for after taken in in trade and then partially overhauled.

Prices on Rebuilt Cars

Then follows another column headed "Rebuilt" which indicates what these used cars have actually brought after the dealer has rebuilt them. These figures are, of course, much higher than those in the two preceding columns, in that the rebuilt used car should bring much more than the partially rebuilt one, or the car that is sold just as it is taken in in the trade deal.

We now come to the last column in Fig. 1 headed "Appraised Value." By "Appraised Value" is meant a value placed on the car by all of the dealers in Chicago selling other makes of cars listing in the same zone as the Packard. Thus, this appraised value would be arrived at by such dealers as Pierce, Locomobile, Peerless, White, Winton and some others. Generally this appraised value comes very close to the actual prices that used cars have brought, it being quite common for the appraised value not to be more than \$50 or \$75 under the actual selling value of these cars.

Fig. 2 is another sample page from the first issue of the Used-Car Central Market Report of the Chicago Automobile Trade Association. At the top appears only a portion of the Chalmers line, the earlier models being on a preceding page. The prices for model 10, 1912, show how close the "As Is" selling value is to the "Appraised Value." This model was actually sold for \$680, and the group of Chicago dealers selling other cars in this class had appraised this model at \$700, only \$20 higher than it had actually brought during the first 3 months of this year.

Down further in this Chalmers group is model 17, 1913 roadster, with an allowance by the Chalmers dealers of \$900, an actual sale or "As Is" value of \$850 and an appraised value by rival dealers of \$800. These three figures give proof positive of the value of this Used-Car Central Market Report, to the dealer, no matter where he resides. The report is a real guide, not a guess work or approximation.

These values are all based on the first 3 months of this year, and the figures were obtained from Chicago dealers who actually took the different cars in trades and sold them at the figures given, or at other figures that were used in getting the

| DEALERS USED CAR SALES STATEMENT | | | | | | | | | |
|--|------|----------|----------------|------|------|------------|-------------------|------------------|---------|
| QUARTER ENDING <u>June 30th 1914</u> 191 <u> </u> | | | | | | | | | |
| MAKE <u>BUICK</u> | | | | | | | | | |
| MODEL | YEAR | TYPE | PASS. CAPACITY | CYL. | H.P. | LIST PRICE | ACTUAL SALE PRICE | | |
| | | | | | | | AS IS | PARTIAL OVERHAUL | REBUILT |
| 28 | 1912 | Roadster | 2 | 4 | 25 | 1075 | \$525 | | |

USE SEPARATE BLANK FOR EACH VEHICLE

FILL IN ONLY ONE CAR ON EACH CARD

FIG. 3—INFORMATION SLIP FOR DEALERS TO FILL OUT

averages which are found in this market report.

The first volume of the Used-Car Central Market Report came from the printer August 5. It contains the information from 753 slips such as shown in Fig. 3. The information was obtained from many Chicago dealers. Each member of the Chicago Automobile Trade Association has received a copy of this first report, which is based on actual values in January, February and March of this year. All of the 753 information slips were based on actual sales of used cars in these three months.

This first volume is not being restricted to members of the Chicago dealers' association, but already they have been sold to dealers in New York, Philadelphia, Boston, Rochester, Buffalo, Detroit, Columbus, New Orleans, St. Louis, Minneapolis, St. Paul, Denver and San Francisco. The Chicago organization is selling a year's service of these market reports for \$24. For this amount you get four volumes of the report, one every 3 months. The next volume will go to press on September 5. It will be larger than the first one, and its information will be based solely on sales made during April, May and June. Already over 630 sales slips have been received for this book.

When the dealer buys this market service he does not buy the books or reports but is only loaned them. He keeps volume 1 until volume 2 is published and reaches him, at which time he returns volume 1.

In compiling this Used-Car Central Market Report the Chicago Automobile Trade Association divided the entire motor car field into four grand divisions as follows:

- Division 1—Electric motor cars.
- Division 2—Gasoline machines listing at \$1,500 and under.
- Division 3—Gasoline machines listing from \$1,501 to \$3,000.
- Division 4—Gasoline machines listing at \$3,000 and over.

Each division is headed by a chairman

and a vice-chairman and in addition to these the membership of the division is every dealer selling cars listing in this price zone. These dealers as a committee meet and settle the "Appraised Value." They also pass on the "As Is" sales, and the other department of the work. The committee or division meets perhaps three or four times a quarter. So all four of the divisions work and pass on the market reports for each quarter.

Need of Used-Car Report

And why should we not have market reports for used cars? We look into our daily papers for the iron and steel reports; the farmer consults them for the prices of cattle and hogs, the broker seeks them for the lists on cotton or corn. True, we would not want a daily used-car report, but we have a quarterly one. In its initial scope the prices are based on Chicago only, but this is temporary. Other zones of prices can be included in succeeding volumes.

President Allison of the Chicago trade association in speaking of the possibilities of this used-car market report said:

"This establishes every claim that was made in the Chicago Automobile Trade Association when its membership selected committees of appraisement, and emphasizes the value of Chicago as a great bourse in which standardization of used-car values has progressed to a practical point not only for the members of our association but for dealers in every city in the country, where the clearing house method of establishing proper appraisements of used cars is not readily applied.

"If this great city volume of business in used cars does not make for a central market quotation every bit as reliable as the quotations from a stock exchange or board of trade, then all the laws of supply and demand and market conditions fail to operate."



Routes and Touring Information



Sixteen Miles of Rose-Bordered Country Highway

By Charles Alma Byers

TO hedge a public highway with thousands of profusely-blooming rose bushes certainly is a unique idea, to say the least. To stroll through rose-bordered walks in some elaborate garden scheme is a treat indeed, but to motor for miles over a country highway lined on both sides with hundreds of thousands of beautiful roses all colors and kinds is an experience that we can hardly imagine outside of fairyland. Nevertheless, such is the glorious experience to be enjoyed by persons who traverse a certain stretch of road in the San Fernando valley, near the city of Los Angeles, Cal.

Rose-Bordered Sherman Way

This country highway, unique for more reasons than one, has been given the name of Sherman way. It begins at a point several miles beyond the city limits of Los Angeles, and extends away from the city for a distance of 27 miles further, intersecting about 47,000 acres of fertile farming land and passing through three small country towns. It is from 150 to 170 feet in width, and throughout its entire length it is brilliantly lighted at night with great ornamental electroliers.

Through the center runs the double track of an interurban electric railway line, on each side of which is a well-paved roadway, with cement curbing. It is on each side of these parallel roads for a distance of 16 miles that the hedges of rose bushes are to be seen—which means that there are four separate rows.

The rose bushes are set 7 feet apart, and there is a total of more than 40,000 plants. They are divided into sections of about 400 feet in length, and in this way one alternately passes through sections devoted exclusively to some one particular color of blossoms. Among the varieties are American Beauty, Ulrich Brunner, Beauty of Glazenwood, Marie Antoinette, Kaiserin Augusta Victoria, Frau Karl Duschkie, General McArthur, Black Prince, Papa Gontier, Paul Neyron, Etoile de France, Cecile Brunner, Madame Caroline Testout, Frau Aaron Ward and Gold of Ophir.

The planting began a little more than 2 years ago, and many of the bushes already have attained a height of nearly 5 feet.

The soil is mainly of a silty nature, very rich and deep, and the bushes grow rapidly and sturdily and bloom profusely. Since it does not rain in southern California in summer, it is necessary to irrigate them, and this is provided for in a very simple and convenient manner. About once every month for a period of 4 months each year



A CALIFORNIA ROAD THAT IS HEDGED WITH ROSES FOR 16 MILES

a ditch is plowed along each row, and from hydrants located every few hundred feet apart the water is turned into the ditches. After irrigation is completed the ditches again are filled up until the next time. A gardener gives his entire attention to caring for the flowers, and the bushes are kept well trimmed and the soil properly cultivated.

Along each of the outer edges of the roadways there is a parkway 30 feet wide, in which, besides the rose bushes, have been set pines and several other kinds of trees. The rose hedge, however, borders immediately upon the roadways. The tree and shrubbery work was donated and is yet maintained by private interests—the company which originally owned and subdivided the acreage into small farms—and the total cost of the planting was approximately \$75,000.

While the double highway passes through three small towns, the hedges of rose bushes and the parkway naturally stop at the edges of the business sections of the town, but the lighting is maintained unbroken throughout its entire length. Along the country roads an electrolier is set every 330 feet, but in the towns the distance intervening is considerably less, depending upon cross streets and the lengths of the city blocks.

The Lighting Equipment

In the towns five-light standards, each containing one 60-watt and four 40-watt tungsten lamps, are used, and in the country the standards are of the three-light type, each containing one 60-watt and two 40-watt tungsten lamps. There is a total of 666 of these ornamental standards, and the average cost of installing the system for its entire length was \$114 per post or

standard. But the Californians believe it is worth it.

The standards are connected by underground conduits containing the distributing wires, and the lighting service is supplied by an overhead system, which feeds into the conduit every mile. All of the lamps are kept burning from half an hour after sunset to 1 a. m. each night, and in the towns the 60-watt lamps burn all night. The system was installed and is maintained through local assessment.

Considering its great length, this probably is one of the most costly and elegant country roads in the world. It certainly is a glorious spectacle, either night or day, and naturally is a favorite with southern California motorists. At night the sparkling lights throw a sheen upon the bordering foliage that produces a fairy-like picture, and from a distant elevation reminds the beholder of a jeweled serpent lying across the valley in graceful curves. In the daylight the flowers and foliage make of it an unrivaled panorama of floral splendor, and all along the way are strewn groves of fruit and nut trees of many kinds, interspersed with attractive country homes.

SANTA BARBARA ROAD WORK

It looked for a while as if Santa Barbara, Cal., was destined to become as isolated to the motor car as any European city within the war zones.

Santa Barbara has the sea to the south and a range of mountains to the north. Between the sea and range is a narrow valley, and to both east and west the distance between the two narrows until they about meet. To the east is what is known as the Casitas pass road, but along the sea runs the Rincon road. To the west, roads

lead out over mountain passes, one the San Marcos and the other the Gaviota.

To both east and west state highway work is projected, work already being under way at the Rincon, while grading contracts have been let to the west and probably by the time this is published a large crew will be busy. This work will make it next to impossible to go through the Gaviota; in fact the outlook is that in another month motor cars cannot come or go other than by the Casitas and San Marcos passes. The situation was becoming serious, as unless something was done the city faced an isolation that would extend over a protracted period.

But the Santa Barbara Automobile Club and the chamber of commerce have solved part of the problem with the assistance of the supervisors of Ventura county. At a recent conference it was decided to get busy with the Casitas pass, which all lies

in Ventura county. The agreement reached was that Ventura county would have the Casitas pass road scraped and provide the oil in case the Santa Barbara folk would pay the labor. That was all agreed to and early in September it can be expected this road will be in better condition than ever in its history. During the last few months it has been a fright. The Rincon road, due largely to present operations, is in a very bad condition and when the Casitas is repaired, the sea-level road will be closed entirely to traffic until the state highway there has been completed, which is expected will be about February 1.

It is somewhat the same situation that must be encountered to the west. It is realized that with many months of state highway work ahead the San Marcos road must be improved. About 6 miles from sea-level this pass rises to an elevation of 2,200 feet, but the grades are not consid-

erable, but steady. The road on the southern side of the range is in fair condition, but attention must be given the flats that approach the Santa Ynez valley. This road always is better in winter than summer because bad, dusty stretches then are reduced. The improvement of the San Marcos must be attended to entirely by the county and the signs are excellent that it will be.

By the time the winter tourist season is on in Santa Barbara road conditions will be very good, but, of course, not so perfect as when the state highway has been completed.

In spite of the state highway there is a very strong sentiment that the pass roads should not be neglected, as they lead through picturesque sections that are not equalled by the state highway which follows the lines of least resistance nearer the coast and on more perfect grades.

Answers to Route Inquiries from Motor Age Readers

Bloomington, Ill.-Dubuque, Ia.

BLOOMINGTON, ILL.—Editor Motor Age—Kindly publish shortest and best route to Dubuque, with general road conditions.—Motor Age Reader.

First go to Ottawa, a distance of 72 miles, via Kappa, El Paso, Minonk, Wenona and Streator over a good dirt and gravel road in good weather, but to Streator the road is bad in wet weather.

To reach Clinton, go through LaSalle, Peru, Seatonville, Hollowayville, Princeton, Van Petten, Sterling, Emerson, Morrison and Fulton, the roads being gravel and natural dirt with some stretches of sand.

Clinton to Dubuque, a natural dirt road of 72 miles over winding, rolling country, is through Lyons, Charlotte, Maquoketa, Fulton and Lamotte.

West Union, Ia.-St. Paul, Minn.

West Union, Ia.—Editor Motor Age—What is the best route to St. Paul, Minn.?—C. A. Lower.

Travel 83 miles to Mason City over the North Iowa Pike through Hawkeye, Williamstown, New Hampton, Charles City, Floyd, Rudd and Nora Springs then north to St. Paul 143 miles through Manly, Kensett, Northwood, Glenville, Albert Lea, Geneva, Owatonna, Medford, Fairbault, Dundas, Northfield, Farmington, and Rosemount.

Racine, Wis.-Keokuk, Ia.

Racine, Wis.—Editor Motor Age—Please furnish a route to Keokuk, Ia.; also mention the distance.—J. Manel.

Racine to Lake Geneva is 42 miles through Yorkville, Rochester, Burlington, Springfield, then turn south and head through Hebron, Ringwood, McHenry, Crystal Lake, Algonquin, Elgin, St. Charles, Geneva, Batavia, Aurora, Bristol, Plano, Sandwich, Somonauk, Wedron, and Ottawa, being 120 miles. To Peoria, 94 miles, it is through La Salle, Peru, Seatonville, Hollowayville, Putnam, Henry, Chillicothe, and Mossville, and to Keokuk via Hanna, Trivoli, Farmington, Ellisville, Prairie City, Bushnell, Blandinsville, La Harpe, Powellton, and Hamilton, 111 miles.

Kansas City, Mo.-Burlington, Ia.

Kansas City, Mo.—Editor Motor Age—What is the routing from Kansas City to Burlington, Ia.? I want to make the trip in October.—L. Jorgenson.

Fairly good roads exist to Chillicothe, 97 miles, via Randolph, Birmingham, Liberty, Excelsior Springs, Lawson, Polo, Cowgill, Braymer, Plymouth, Ludlow, Utica, then to Ottum-

wa, 153 miles, via Trenton, Tindall, Spickard, Princeton, Mercer, Linville, Clio, Allerton, Harvard, Seymour, Centerville, Moravia, Foster. The Blue Grass road from Ottumwa to Burlington is followed and is 76 miles over good dirt roads through Batavia, Fairfield, Glendale, Lockridge, Rome, Mt. Pleasant, New London, and Middletown.

Reno, Nev.-Truro, N. S.

Mason, Nev.—Editor Motor Age—What is the route from Reno, Nev., to Truro, Nova Scotia, also approximate mileage?—C. B. Newcomb.

You should follow the Lincoln highway practically as far as South Bend, passing through Fallon, Austin, Eureka, Ely, Cherry Creek, Curries, Coble, Kelton, Brigham, Ogden, Evanston, Granger, Rock Springs, Point of Rocks, Wamsutter, Rawlins, Medicine Bow, Laramie, Cheyenne, Kimball, Sidney, Julesburg, Ogallala, North Platte, Lexington, Kearney, Grand Island, Columbus, Fremont, Omaha, Neb., diverging from the Lincoln highway and following the White Pole route through Council Bluffs, Atlantic, Anita, Adair, Menlo, Stuart, Dexter, and Des Moines, thence the River-to-River road through Colfax, Newton, Grinnell, Marengo to Cedar Rapids, then back to the Lincoln highway and via Mechanicsville, Clarence, DeWitt, Clinton, Sterling, Rochelle, DeKalb, Geneva, Aurora, Joliet, Dyer, Valparaiso, and Laporte to South Bend.

The run to Cleveland is 164 miles over gravel or stone roads all the way through Osceola, Goshen, Ligonier, Wawaka, Kendallville, Bryan, Archbold, Napoleon, Bowling Green, Pemberville, Woodville, Gremont, Clyde, Bellevue, Monroeville, Norwalk, Townsend, Oberlin, Elyria, and Cleveland. Cleveland to Buffalo is a day's run over a well traveled road through Painesville, Unionville, Geneva, Ashtabula, Conneaut, Springfield, Girard, Erie, Wesleyville, North East, Ripley, Westfield, Brocton, Fredonia, Sheridan, Silver Creek, Irving, Brant, Hamburg, Lackawanna. The next day is to Syracuse, and through Pembroke, Batavia, Le Roy, Caledonia, Mumford, Scottsville, Rochester, Mendon, Canandaigua, Geneva, Seneca Falls, Auburn, Sennett, Elbridge, Camillus and Syracuse. Albany can be made the next day via Manlius Center, Mycenae, Chittenango, Canastota, Vernon, Utica, Frankfort, Mohawk, Little Falls, St. Johnsville, Palatine Bridge, Fonda, Trives Hill, Amsterdam, Schenectady, and Albany. Between Albany and the White Mountains, Bretton Woods, the road lies through Melrose, Schaghticoke, Valley Falls,

Johnsonville, Eagle Bridge, North Hoosick, N. Bennington, Arlington, Manchester, Londonderry, Simonsville, Chester, Springfield, North Charlestown, Claremont, Ascutneyville, Windsor, Hartland, White River Junction, W. Lebanon, Hanover, Lyme, Orford, Piermont, Haverhill, Bath, Lisbon, Bethlehem, Maplewood, Twin Mountain House and Bretton Woods.

A beautiful view is to be had all the way from Portland to St. John and the run from Bretton Woods to Portland instead of straight to Bangor by an inland road is quite the proper plan to pursue. To Portland it is 110 miles via Bartlett, Glen, Intervale, North Conway, Center Conway, Fryeburg, East Brownfield, Hiram, Cornish, North Limington, East Limington, Standish, White Rock, South Windham, Cumberland Mills, Brighton Corners, Portland. Along the coast road it is 141 miles to Bangor through Falmouth Foreside, Yarmouth, Freeport, Brunswick, Bath, Wiscasset, Newcastle, Damariscotta, Glendon, Waldoboro, West Warren, Thomaston, Rockland, Rockport, Camden, Lincolnville, Northport, Belfast, Searsport, Stockton Springs, Prospect, Frankfort, Winterport, Hampden, and Bangor.

To reach St. John, N. B., first run 38 miles to Ellsworth via Brewer, Orrington, Bucksport, and Orland then 106 miles to St. Stephen, N. B., via Hancock, ferry to West Sullivan, continuing through Gouldsboro, Steuben, Millbridge, Harrington, Jonesboro, Machias, Meddybemps, Baring, Milltown, and Calais, and finally 83 miles to St. John via St. Andrews, St. George, Lepreaux, Musquash, and Fairville.

A very fair road and a beautiful trip is that of 96 miles to Moncton through Rothesay, Hampton, Sussex, Monopolus, and Petitcodiac. The next 80 miles through Memramcook, Dorchester, Sackville, Amherst, Oxford, and Colingwood, is fairly poor dirt roads and to Londonderry it is rough and mountainous but the balance of the way to Truro, which is 28 miles, is good.

The approximate mileage is 4,017 miles and the entire trip is outlined in Blue Books 5, 4, 1, and 2, taken up in succession. Each volume is \$2.50 and can be secured from the Automobile Blue Book Publishing Co., Chicago.

A Roundabout Route

Washington C. H., O.—Editor Motor Age—What is the best route from Columbus, O., to Sandusky then to Cleveland, Buffalo, Niagara Falls and coming back through Canada to Port Stanley from there by steamer to Cleveland and through Akron to Columbus. How are the roads the first part of September and what is

the approximate mileage? What are the Canadian regulations for motor cars?—R. R. P.

Routing via Sandusky to Cleveland makes a mileage of 185 miles and through such towns as Worthington, Delaware, Marion, Bucyrus, Brokenward, Lykens, Bloomville, Republic, Bellevue, Clyde, Castalia, Sandusky, Huron, Vermillion, Lorain and Rocky River.

The 196 miles to Buffalo is made in a day following along Lake Erie through Willoughby, Painesville, Madison, Unionville, Geneva, Ashtabula, North Kingsville, Conneaut, East Springfield, Girard, Erie, Westleyville, Mooreheadville, North East, Ripley, Westfield, Portland, Brocton, Fredonia, Sheridan, Irving, Brant, Hamburg, and Lackawanna.

Over the new boulevard it is 26 miles through Johnsbury to Niagara Falls.

To London, Ont., the run is via St. Davids, St. Catharines, Beamsville, Grimsby, Hamilton, Ancaster, Alberton, Gainsville, Brantford, Cathcart, Woodstock, Ingersoll, and Thamesford. Lambeth and St. Thomas lead to Port Stanley.

The last run to Columbus from Cleveland is 200 miles by way of Akron as requested, taking you 58 miles to Canton by way of Brecksville, Ghent, Akron, Springfield, Greentown, and New Berlin, then via Navarre, Justus, Beach City, Canal Dover, New Philadelphia, Tuscarawas, Gnadenhutten, Port Washington, New Comerstown, Coshocton, Franklin, Adams Mills, Trinway, Dresden, Shannon, Irvile, Hanover, Newark, Granville, and Columbia Center.

The roads receiving the most travel during the summer are not as good in the fall as at the beginning of the season, but nevertheless are satisfactory.

For the province of Ontario the car must be registered, and a driving license obtained in addition to securing a bond. All these formalities may be completed through one company in Niagara Falls which will have all ready upon your arrival at a charge of \$9.30, including the premium for the bond.

Aurora, Mo.—Quannah, Tex.

Aurora, Mo.—Editor Motor Age—Please advise the route to Quannah, Tex., thence via Dallas to Aurora.—W. S. Steward.

Route to Joplin, then cross Kansas to Arkansas City through Galena, Chetopa, Edna, Valeda, Coffeyville, Tyro, Caney, Niotaze, Peru, Sedan, Wauneta, Cedarville, Hooser, Dexter and Winfield. From Coffeyville to Winfield it is all hills and hollows, but none bad.

From Arkansas City, 15 miles south, follow the Oklahoma, Texas and Gulf highway to Oklahoma City via Newkirk, Ponca City, Perry, Mulhall, Guthrie, Mineral Wells, and Edmond. Then a connection is made at El Reno, reached by Yukon, with the Meridian road and this highway is followed south through Minco, Pocasset, Chickasha, Anadarko, Stecker, Apache, Lawton, Emerson, Randlett, Burkburnett, and Wichita Falls, Tex.

Quannah is 86 miles on the Colorado to Gulf highway, reached via Burnett's ranch, Fowlkes, Electra, Harrold, Vernon, Chillicothe, and Damsite.

On the return trip come back to Wichita Falls, thence to Dallas through Henrietta, Bellevue, Bowie, Sunset, Alvord, Decatur, Rhome, Ft. Worth, and Grand Prairie. Going north to Oklahoma City over the Oklahoma, Texas and Gulf highway the run is through McKinney, Anna, Howe, Sherman, Denison, Durant, Millburn, Seagar, Sulphur, Davis, Wynnewood, Lexington, and Norman. The balance of your trip is over the same road as the going, that is, up to Arkansas City and across Kansas east to Galena, then Joplin, Mo.

Goshen, Ind.—Brownsville, Tex.

La Grange, Ind.—Editor Motor Age—I would like a route from Goshen, Ind., to Brownsville, Tex.—Wm. H. Metzger.

Route to Elkhart and strike the Lincoln highway, traversing this through South

Bend, Laporte, Valparaiso, Dyer, Joliet, Aurora, Geneva, DeKalb, Rochelle, Ashton, Dixon, Sterling, Morrison, Clinton, Ia., Wheatland, Mechanicsville, Lisbon, Mt. Vernon, Marion to Cedar Rapids. Leave the highway at this city and run through Walford, Amana, Marengo, Ladora, Victor, Carnforth, Brooklyn, Grinnell, Kellogg, Newton, Colfax, and Mitchellville to Des Moines. A very good road to Omaha lies through Van Meter, Earlham, Stuart, Menlo, Casey, Adair, Wiota, Atlantic, Lewis, Oakland, and Council Bluffs.

Go as far west as Fairmont to strike the Meridian road, passing through Millard, Ashland, Waverly, Havelock, Lincoln, Emerald, Milford, Friend and Exeter. Turning south follow the Meridian road as far as Wichita, Kans., and it will take you through Geneva, Strag, Bruning, Belvidere, Hebron, Chester, Belleville, Concordia, Minneapolis, Salina, Bridgeport, Lindsborg, McPherson, Moundridge, Hesston, and Newton. Wichita to Arkansas City is 63 miles of good stone road via Derby, Mulvane, and Winfield.

Following the Oklahoma, Texas and Gulf

The Motorists' Bookman

The Amazing Argentine

WITH European trade strangled by the iron hand of war, the American manufacturer suddenly has turned his attention to South America in the hope that there he will find buyers for his goods that he formerly sold across the Atlantic. For this reason the American manufacturer should find much profitable information in "The Amazing Argentine," a study of the social, political and industrial conditions in this republic of enterprise by John Foster Fraser. The author deals at some length with the antipathy in which the United States is held in South America because of the patronizing attitude of this country, and points out how this must be overcome before the American manufacturer can hope to sell his goods in large quantities there. He also adds: "Countries doing a big trade with the Argentine are beginning to see the force of providing goods on the spot. The crowding of agents in the principal towns has increased competition to a point at which the next move by certain competitors must be in the direction of producing in the country or losing the trade entirely. This will be all the better for Argentina. She has long had justifiable cause for complaint against those who are sent to Buenos Aires and other parts to barter for her trade. A well-worn lament in the reports of the British consul concerns the English trader's lack of adaptability to the peculiar conditions of Argentina." The book also is interesting from the traveler's viewpoint. The book is illustrated from photographs, is published by the Funk & Wagnalls Co., New York, and sells for \$1.50.

highway to Dallas takes you first 137 miles to Oklahoma City by way of Newkirk, Ponca City, Perry, Orlando, Mulhall, Guthrie, and Edmond, then 196 miles to Denison, Tex., over good natural roads via Norman, Noble, Lexington, Wynnewood, Davis, Sulphur, Millburn, Durant, and Colbert, and 85 miles to Dallas via Sherman, Howe, Van Alstyne, Anna, Melissa, and McKinney.

The gravel road to Ft. Worth, 33 miles, extends through Grand Prairie, and Arlington.

The Waco run of 139 miles is traversed through Cleburne, Bono, Nemo, Rainbow, Glenrose, Walnut Springs, Meridian, Clifton, Valley Mills, China Springs, and Erath, then 133 miles to Austin through McGregor, Moody, Pendleton, Temple, Sparks, Holland, Bartlett, Granger, Georgetown, and Round Rock. Continuing 83 miles to San Antonio you pass through such way-points as Buda, Kyle, Goodwyn, New Braunfels and Selma.

Between San Antonio and Brownsville your route lies by way of Calaveras, Floresville, Poth, Falls City, Karnes City, Kennedy, Pettus, Normanna, Beeville, Skidmore, Alice, Kingsville, Ricardo, Raymondville, McAllen, Pharr, San Juan, Donna, Mercedes, and directly to Brownsville.

Red Oak, Ia.—Seneca, S. D.

Stanton, Ia.—Editor Motor Age—I would like a route from Red Oak to Seneca, S. D., and from there to Wetonka. I want to go the first part of September.—R. C. Selser.

Go to Council Bluffs by way of Hastings, Malvern, and Glenwood, then across to Omaha. From Omaha it is 113 miles to Sioux City via Calhoun, Blair, Tekamah, Craig, Oakland, Lyons, Walthill, Winnebago, Homer, and Dakota City; to Sioux Falls, 95 miles, crossing and re-crossing the state line several times taking you through Westfield, Akron, Chatsworth, Hawarden, Hudson, Beloit, Canton, and Harrisburg. Travel 166 miles to Huron via Hartford, Colton, Chester, Madison, Romana, Oldham, Lake Preston, De Smet, Manchester, Iroquois, and Cavour. Passing through Wolsey, Redfield, and Faulton will see you in Seneca. For Wetonka come back to Redfield and run north through Aberdeen.

Tuskegee, Ala.—Greensboro, N. C.

Tuskegee, Ala.—Editor Motor Age—How are road conditions for a tour to Greensboro, N. C.? What is the distance and how may I know when I am taking the correct and best road for the trip?—C. D. Robinson.

If you secure a Blue Book 3 you will have running directions from Tuskegee to Greensboro. This will cost you \$2.50 and can be secured from the Automobile Blue Book Publishing Co., 2160 Broadway, New York. This book will also give you town-to-town miles as well, maps and other good information. The road leads through Opelika, Glass, Westpoint, Trimble, Grantville, Newman, Palmetto, Fairburn, Atlanta, Lawrenceville, Jefferson, Commerce, Bayston, Bowersville, Anderson, Piedmont, Greenville, Gafney, King's Mountain, Charlotte, Concord, China Grove, Salisbury, Lexington, Thomasville, and Highpoint. The distance is 550 miles.

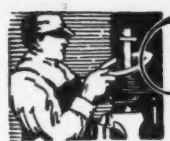
Louisiana, Mo.—Osceola, Mo.

New Canton, Ill.—Editor Motor Age—What is the best road from Louisiana, Mo., to Osceola, Mo.; also the mileage?—R. A. Dudley.

Your best road lies toward Kansas City through Bowling Green, Curryville, Vandalia, Laddonia, Mexico, Thompson, Clark, Renick, Higbee, Yates, Armstrong, Glasgow, Slater, Marshall, Mt. Leonard, Blackburn, Corder, Higginsville, Mayview, Odessa, Oak Grove, Grain Valley, Independence, and Kansas City.

Going south route via Peculiar, Harrisonville, Lone Tree, Archie, Adrian, Butler, Rich Hill, either going from here to Osceola or passing on to Nevada and then over. The mileage is between 350 and 370.

The Motor Car Repair Shop



The first operation in repairing a tread cut is to take a small screwdriver or a knife, the end of which has been wound with gasoline-soaked cloth, and clean the cut thoroughly. It may be that sand, dirt, a small stone or perhaps a piece of glass has made its way under the surface of the rubber

EVERY motorist knows that much of the upkeep of operating a motor car is spent for tires and tire repairing and there are many who could increase their tire mileage considerably by spending a few hours' time once each week examining and repairing the casings and tubes. Nearly all owners know that tires are expensive comparatively and they know also just what is necessary to increase tire mileage but few put their knowledge to practical use. Failure to know how is excusable but neglect is not.

A vulcanizer is almost as essential in the tool box as a pair of pliers, for much money can be saved if more vulcanizing and less patching is done. Tube cuts will vary in size and shape. A small hole, a puncture perhaps, should not be patched if it is more than $\frac{1}{4}$ -inch in diameter or if it is a cut of more than $\frac{3}{4}$ -inch in length it also should be vulcanized. Patches rarely hold well over large holes. Many drivers will try to patch a 3-inch hole while others, the more progressive, will vulcanize even the smallest puncture. Cementless patches are good for tubes and do not require much time for application. Ordinarily patches if properly applied give good results and some prefer them to the cementless kind.

The first step in preparing a tube puncture with an ordinary patch is to clean the surface of the tube around the hole. Use gasoline for this. Then with a piece of sand paper or fine emery cloth roughen the surface around the hole slightly and again clean with gasoline. If an ordinary patch is to be used, a coat of cement should be applied and after it has dried another and still a third, after the second has dried. Then apply the patch

Tube and Casing Repairs

after which a weight should be placed upon it to allow it to take firm hold at all points. When cementless patches are used all that is necessary is to clean the surface around the puncture with gasoline, separate the two portions of the patch, dipping the patch itself in gasoline and then applying the patch. After allowing it to remain in position for about 10 minutes the tube may be placed into the casing. In all tube repairs be sure that the tube rests upon a clean, flat surface before any work is done.

The vulcanizing of inner tubes is a simple matter whether the vulcanizer operates by burning a fuel such as gasoline or alcohol, or whether it uses steam. It takes a little longer to do a good vulcanizing job than to apply a cementless patch but the trouble will be worth while. The preliminary steps for vulcanizing are the same as for applying a cementless patch—the tube is cleaned around the puncture and then roughened. A piece of prepared rubber is cut to the proper size and one side of the rubber is moistened with gasoline which is permitted to evaporate. It then is placed over the puncture. In most fuel vulcanizers a measured amount of gasoline is placed in a container. This should be done after the device has been clamped tightly in position. The usual time required for the fuel to be consumed is 11 minutes and it should not burn for much more otherwise the rubber is liable to be burned.

In repairing casings it always is best to vulcanize, but where the cuts or holes are small, a filler of some sort will sometimes do the work. The first step in plugging small cuts is to clean the cut thoroughly, first removing foreign matter with the aid of the end of a knife blade. Then wrap a piece of clean cloth around the end of a small screwdriver or a knife as shown in an illustration on this page; soak the cloth in gasoline and proceed to clean the



Before applying a patch to a punctured inner tube, roughen the surface of the rubber around the puncture with sandpaper or fine emery cloth, and then clean the roughened surface with gasoline. After the gasoline has evaporated a coat of cement should be applied as shown above, using a match, stick or small brush. After the first coat has dried apply two others

cut thoroughly. Next with a match stick apply a coat of cement, getting it inside the cut on all sides. After this has dried another coat should be applied, then the cut is ready for the filler. The filler first should be kneaded between the fingers, then worked into the cut with a screwdriver bit or the end of a knife blade after which the excess filler is cut away. It is a good idea to allow the surface of the filler to go a trifle under the surface of the tire because the filler expands in a short time. If the tire is on a car which is desired to be moved around a small piece of cloth or paper should be cemented over the filler, but not to it. This will give the filler a chance to set without picking up dirt.

In vulcanizing casing cuts, clean the rubber around the cut with emery cloth, then use a wire brush which usually is part of the equipment given with the vulcanizer. Clean the surface with cloth and apply a coat of vulcanizing cement and allow it to dry thoroughly. A piece of raw rubber the size and shape of the cut to be filled then is placed in the cut. It sometimes is necessary to use many layers of rubber to fill the hole. A little tire tale is sprinkled over the rubber and the vulcanizer applied.

Care of Grease Cups

Lost caps from grease cups are a frequent source of annoyance and sometimes result in damage to the parts intended to be lubricated by the grease that has disappeared on account of the lost cap.

Of course, usually the trouble goes no further than the necessity for a new cap. It is a great deal better to employ a set of really good cups with locked caps. A grease cup cap may go on quite stiffly and seem secure, but it is amazing what vibration will do in the way of shaking off things that appear to be immune from such trouble.



This shows various sizes and varieties of tube injuries. That at A, a long cut more than 3 inches should be vulcanized, as no patch will hold any length of time. That at B is a large hole more than $1\frac{1}{2}$ inches in diameter, and should be vulcanized. At C is a small hole not more than $\frac{1}{4}$ -inch diameter, over which a patch may be placed, but at D a hole of about 1-inch diameter a patch would not be effective



The Readers' Clearing House



PRESSURE IN DIESEL OIL ENGINE Depends Upon the Load and the Viscosity of the Fuel Oil

DETROIT, Mich.—Editor Motor Age—What is the air and oil pressure used in the true Diesel type oil engine and what pressure is necessary to ignite the mixture in the cylinder? 2—Who could supply such compressors?—G. V. Schmidt.

1. The injection air pressure required by the true Diesel engine varies between 700 and 1,100 pounds, depending chiefly upon two factors: the load and viscosity of fuel oil.

The higher the load and the higher the viscosity of fuel oil, the higher the injection air pressure required. Inasmuch as both the oil and the air enter the chamber back of the fuel valve together the oil takes the same pressure as the air automatically.

Fuel oil is ignited by the temperature of the air in the combustion space of the cylinder. This air is raised to requisite temperature by compression on the compression stroke of the cycle. A compression of about 550 pounds results in the temperature of about 1,000 degrees Fahrenheit, inasmuch as fuel oils will ignite at temperatures ranging from about 120 degrees to 300 degrees Fahrenheit.

2. The following makers of air compressors would, no doubt, be able to supply the proper type: Kellogg Mfg. Co., Rochester, N. Y.; Brunner Mfg. Co., Utica, N. Y.; Lipman Air Appliance Co., Beloit, Wis.; and the Allis Chalmers Mfg. Co., Milwaukee, Wis.

Installing an Ammeter

Britt, Ia.—Editor Motor Age—Kindly give a wiring diagram showing an Auto-Lite system using an ammeter.—E. Paulson.

The illustration in Fig. 1 shows the Auto-Lite system with an ammeter installed in the circuit between battery, generator and the switch.

SAFETY FIRST AT CROSSINGS Points Out Carelessness of Many Drivers of Motor Cars

Aurora, Ill.—Editor Motor Age—I have read with pleasure the editorial, "Stop, Look and Listen" in the July 30 issue of Motor Age. I have come to the conclusion that the majority of accidents, where a car has been hit by a train, are due to the carelessness of the driver of the car in not taking due caution.

Take, for instance, where a street car line crosses a railroad track, the conductor of the street car must go ahead to see if a train is coming before the car can proceed, and this same car probably crosses the same tracks many times a day, day in and day out, until the conductor gets to know when to expect a train, but still

he must look. A tourist going through the place for the first time, as a rule dashes across without looking, leaving it to fate whether he gets across or not.

Drivers of motor cars should use double precaution where the road crosses the tracks of a high-speed interurban line, as these cars as a rule run quietly at a high speed. When I come to a railroad crossing, I send one of the party ahead to look and see if there is a train coming, then I proceed across on second speed, never on high. A few minutes to stop and look and listen may be the means of saving your life. The lost time can be made up when safely across.—For safety's sake, safety first.—Glen M. Royston.

ADJUSTING OF HUPMOBILE CLUTCH Eight Springs Each to be Turned the Same Distance—Dorris Ignition

Hawthorne, Nev.—Editor Motor Age—Who makes the Miller carburetor?

2—Kindly explain the ignition system on the 1913 Dorris. Is it by battery only, or is the current supplied direct from the dynamo to the Bosch coil?

3—On my 1913 model 32 Hupmobile the clutch drags when the pedal is pressed and yet slips while the car is pulling. Explain this, and give me full instructions with diagram for adjusting it properly.—E. F. Box.

1—The Miller carburetor is made by the New Miller Carburetor Co., Indianapolis, Ind.

2—The ignition system of the 1913 Dorris consists of a battery in series with a generator. At low speeds the generator does not charge the battery and the current for ignition and lighting as well, is supplied by the battery, but after the car speeds up to more than 10 miles per hour the current for the ignition and lights is taken directly from the generator. Dry cells are used for emergency, should the storage battery fail.

3—The Hupmobile clutch is of the disk type running in oil, and if it slips while pulling, clean the plates with kerosene or adjust the springs. This is done by removing the gearset cover and screwing up the nuts A in Fig. 2 until the required tension is obtained. These nuts, eight in number, lock by springs every one-third turn. Each nut should be turned the same distance to insure even tension. When the pedal is depressed a clutch brake comes into operation which tends to prevent the clutch from spinning. Evidently this is what

you consider a drag. It would be wise to look at the brakes for if they are too tight there will be a tendency on the part of the clutch to slip.

GIVES ADVICE ON SHIFTING GEARS Cadillac Owner Discovers How to Change Without Clashing

Minneapolis, Minn.—Editor Motor Age—I drive a 1913 Cadillac car, and after careful observation of the gearshift and several trials, I have arranged to shift the gear from intermediate to high speeds without observing the slightest noise.

I found that in changing gears from intermediate to third cannot be accomplished unless a great pressure is exerted on the gear shifting lever so as to get the gears in mesh which, naturally causes a loud noise. After trying out several so-called, anti-noise gearshifting methods given me by experienced drivers, I have found a way to eliminate the noise in shifting gears with good results, the operation being done as follows:

From low to intermediate gearshift is obtained in the usual manner, but from intermediate to high speed it is done by disengaging the clutch and pulling the gearshifting lever to a neutral point on the sector, then quickly reengaging the clutch and pulling the gearshifting lever into third position immediately.

This noiseless gearshifting is accomplished easily when the car is traveling on intermediate from 13 to 15 miles per hour, but for a greater traveling speed the engine would have to be speeded up accordingly to the speed of the clutch claw on the propeller shaft.—J. E. H.

Light Pistons for High Speed

Raymond, Kan.—Editor Motor Age—Which give the more power, light or heavy pistons?

2—What concern makes Leak-Proof piston rings?

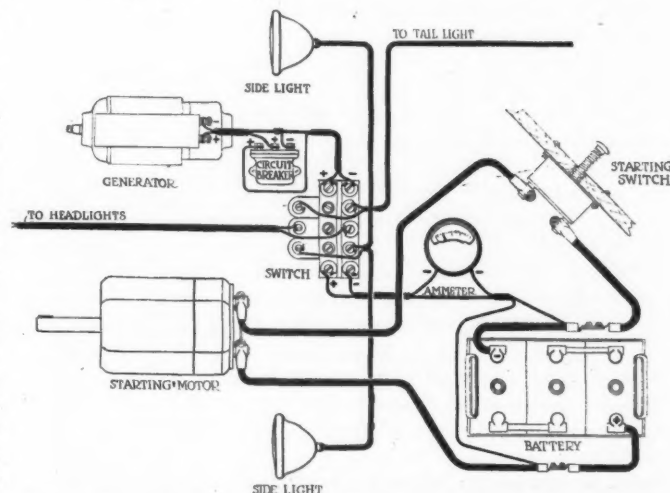


Fig. 1—Wiring diagram of an Auto-Lite cranking and lighting system, showing the installation of an ammeter

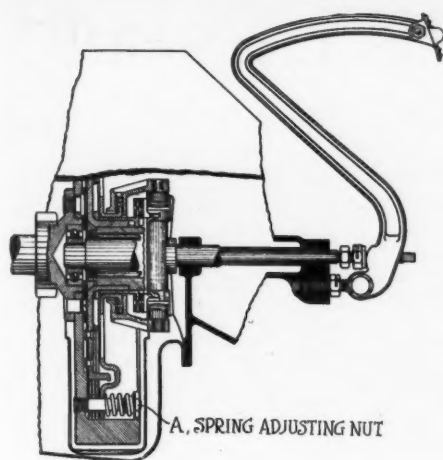


Fig. 2—Sectional view of the 1914 Hupmobile clutch, showing one of the adjusting nuts A for increasing spring tension. There are eight of these nuts

3—Is there a concern making a three-speed forward transmission that can be installed in a Ford model T?

4—Will larger exhaust valves make an engine run any cooler by reason of quicker and easier escape of heated gases?—M. C. Demint.

1. Lighter pistons are better than heavy ones for obtaining more power.

2. The McQuay-Norris Co., St. Louis, Mo.

3. Motor Age knows of no such concern.

4. Larger exhaust will help cooling.

Everitt 30 Oiling System

Mt. Olive, N. C.—Editor Motor Age—Kindly illustrate the oiling system of the Everitt 30, 1913 model.

2—With touring body what speed is this car capable of making?—James H. Williams.

1—The Everitt 30 employs the vacuum system of feeding the oil and this was described and illustrated in Motor Age, issue of June 4, page 32.

2—The car is capable of traveling over 50 miles per hour with the top down.

TWO-CYCLE ENGINE IS CARBONIZED

Reader States it Overheats and Misfires—May Run Well at High Speeds

Springville, Ia.—Editor Motor Age—I have an Elmore model 25 runabout, which seems to backfire or ignite the charge as it goes into the cylinder. The spark plugs have been out once in two months and were in good shape. The car is fitted with an Atwater-Kent ignition system, which works well. The batteries are new and the breaker points are set up as close as necessary in order to give a good spark at the plugs. I understand that this two-cycle engine is inclined to pre-ignite more or less, but thought it would do so much more as it was working up to its full load and as it became very hot. A Schebler model D carburetor is fitted. What is the cause of the backfiring and the remedy?—Bert Jordan.

Questions Answered and Communications Received.

G. V. Schmidt.....Detroit, Mich.
E. Paulson.....Britt, Ia.
J. M. Royston.....Aurora, Ill.
E. F. Box.....Hawthorne, Nev.
M. C. Demint.....Raymond, Kan.
J. E. H.....Minneapolis, Minn.
J. H. Williams.....Mt. Olive, N. C.
Bert Jordan.....Springville, Ia.
South Side Garage.....Fort Worth, Tex.
W. E. Summerell.....St. Petersburg, Fla.
Lloyd Peticolas.....El Paso, Tex.

No communication not signed with the reader's full name and address will be answered.

It appears to be a case of a carbonized motor. Misfiring and overheating usually are good indications that there is a carbon deposit on the cylinder head and piston. Small protruding particles of this carbon become red hot and ignite the charge the moment it enters the combustion chamber. When the car is moving rapidly the misfiring may not be so aggravated, but when operating slowly or possibly idling the misfiring will be in evidence. There are many two-cycle engines which act peculiarly, as you say, but it appears that your engine needs a good cleaning internally. At the same time check up on the carburetor adjustments. Although carbon will cause heating, a rich mixture will show the same results.

WANTS TO REGISTER WITH A. A. A.

Association Gives no Examination—How to Get Into Racing Game

St. Petersburg, Fla.—Editor Motor Age—What is the nature of the American Automobile Association's examination and test for racing driver's license?

2—What is the fee for an A. A. A. license?

3—Is it a national license? Does it have to be renewed yearly, and if so, are yearly examinations required?

4—Is it necessary for one to be a factory man to become a racing driver?

5—What is the best way to get into the racing game?—William E. Summerell.

1—A driver must satisfy the A. A. A. as to his racing ability.

2—A driver's license costs \$3 and a mechanic's \$2.

3—The license must be renewed annually and permits you to race at sanctioned meets.

4—One need not be a factory man to become a racing car driver.

5—The best way to enter the racing game is to get a position as mechanic or relief mechanic with some driver so that you can learn how to care for a car before and after a race. At the same time you might get an opportunity to drive. You should team with a driver for perhaps 2 years and by that time you will have learned much concerning preparations for a race and how work is done during a contest. You of course must understand motor car mechanisms.

VIBRATOR TO NON-VIBRATOR COIL

Transformation Usually Gives Poor Results—Ignition Data

Fort Worth, Tex.—Editor Motor Age—Is it possible to use a vibrator coil with a magneto other than a Ford?

2—Can a vibrator be converted to a non-vibrator coil for use with a low-tension magneto?

3—What is the difference between a two and four-cylinder Pfanstiel coil?—South Side Garage.

1—Motor Age knows of no system using a magneto and a vibrating coil alone. It would be possible to reconstruct an ordinary magneto so that a non-vibrator coil may be used and in this case the interrupter mechanism must be taken out of the circuit. The reconstruction is not advised.

2—A vibrator coil could be used as a non-vibrator coil by removing the vibrator mechanism entirely and taking the primary and secondary terminals and attaching them to their proper places. Another way

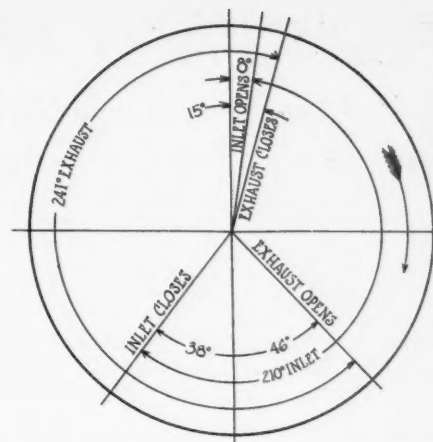


Fig. 3—Diagram showing the valve timing of the Overland. The explanation of this chart is given in the text

would be to short-circuit the vibrator terminals. The coil then virtually becomes one of the non-vibrator type. This practice is not recommended and in connection with a low-tension magneto it might result in considerable trouble. There would be little gained as the magneto already has an interrupter and is designed for use with a non-vibrating coil.

3—There is no difference between a two-cylinder and four-cylinder Pfanstiel coil except as to the number of units. It may be in certain installations the windings are a little different but fundamentally both types are alike.

VALVE TIMING OF THREE MOTORS Cadillac, Velie and Overland Formulae Are Given

El Paso, Tex.—Editor Motor Age—Kindly give me the valve timing on the following cars: Velie 35, Velie 45, Cadillac, and Overland.

2—When it is said that a valve opens at a certain time, does it mean that it is wide open, or just beginning to open?—Lloyd Peticolas.

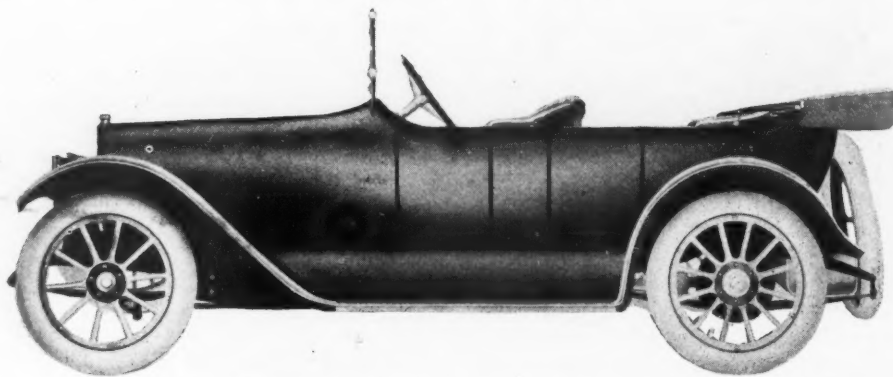
In the Velie 35 the intake valve opens 5 degrees before top dead center and closes 31 degrees after bottom dead center. The exhaust valve opens 39 degrees before bottom dead center and closes 13 degrees after top dead center. In the Velie model 45 the intake opens 7 degrees before top dead center and closes 36 degrees after bottom dead center. The exhaust valve opens 43 degrees before bottom dead center and closes 12 degrees after top dead center. In these motors 1 inch on the flywheel will approximate a crank movement of 7 degrees. In the Overland models 69 and 71 the intake valve opens 8 degrees past upper dead center and closes 38 degrees after lower center. The exhaust valve opens 46 degrees before lower dead center and closes 15 degrees past upper dead center. A chart which makes this understand easily is shown in Fig. 3. In the Cadillac the inlet valve starts to open 4 degrees, 20 minutes, past top dead center and closes 38 degrees, 26 minutes after lower dead center. The exhaust valve opens 31 degrees, 34 minutes before lower dead center and begins to close 7 degrees past top dead center.

Small Six At \$1,485 the New Car in Haynes Line for 1915

Large Six and Four of Last Season at Reduced Prices

ONE new six and a carried-over six and four comprise the 1915 line of the Haynes Automobile Co., Kokomo, Ind. The new car, called the model 30 is a small six, selling for \$1,485 and incorporates many new features in the frame, motor, body and spring suspension. The carried-over models now are called the 31 six and the 32 four, last season's designations being model 26 and 28, respectively. The model 27, which was exactly like the 26, with the exception of the frame length and wheelbase, has been discontinued.

Prices of the improved models have been reduced, the four now selling for \$1,660 instead of \$1,785 and the six at \$2,250 instead of \$2,500. The electric gearshift,



The new Haynes small six touring car which sells for \$1,485 with full equipment, including Leece-Neville cranker

FEATURES OF THE 1915 HAYNES LINE

Small six a new car with new frame suspension

Streamline bodies on all

New type of clutch on the three chassis

Haynes-made axle on the new six

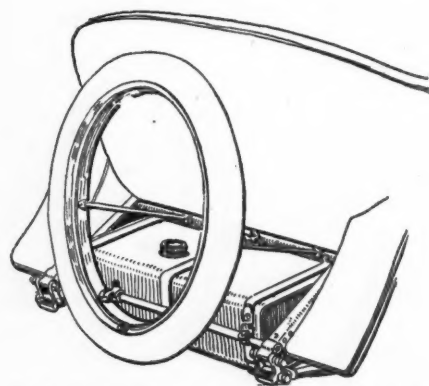
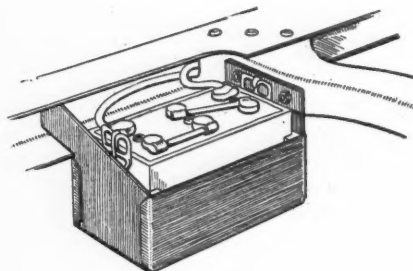
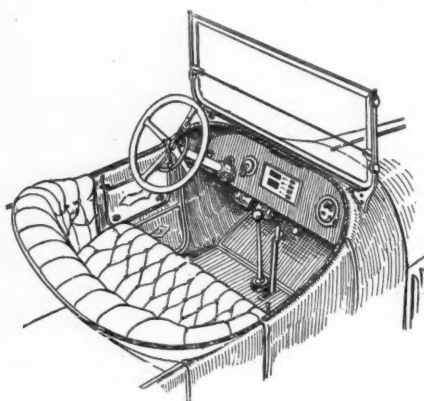
Block motor for the first time

Stewart vacuum gasoline feed

Large six reduced \$250

Four reduced \$125

Electric gearshift on carried-over cars only



The upper illustration shows the neat dash of the new Haynes six and the center control members, this car not being equipped with an electric gearshift as optional. The middle illustration shows how the battery is carried under the tonneau floor boards and the bottom sketch shows the method of carrying the extra tire at the rear

featured last year, is made optional equipment only on these two models, the extra cost for the installation being \$125. The only chassis change of importance in the continued models is the adoption of a three-plate dry-disk clutch instead of the contracting steel band type used for a number of years in Haynes cars. Bodies have come in for much improvement and the lines are in accordance with present day demands—pure streamline with a graceful sweep from cowl to radiator, bell back and clean sides.

Departures in New Six Design

The new six has a 120-inch wheelbase and shows some departures from past Haynes practice, the greatest achievement having been made in the frame construction and spring suspension. The rear of the frame is formed into a rather high arch over the rear axle, this construction affording a means of obtaining comparatively long, flat semi-elliptic springs and consequently easy riding. The new suspension can be seen in the illustration on the next page.

A block motor is another departure, last year all the cars having pair-cast engines and this year the carried-over four and six being so equipped. For the first time the Haynes company is building its own rear axles, the new small six using both housing and shafts made in the Haynes

shops; but the other two cars still employ Timken axles. A new design of dry-disk clutch, an entirely new body and the adoption of the Stewart vacuum gasoline feed are other features of the new six.

The small six engine is of the L-head type, cast in block and has a bore and stroke of $3\frac{1}{2}$ by 5 inches, giving it a stroke-bore ratio of 1.43 to 1, a displacement of 288.6 and an S. A. E. horsepower rating of 29.4. As against former practice this engine is suspended by three points, one in front by means of an arm extending across the frame directly behind the radiator and two in the rear.

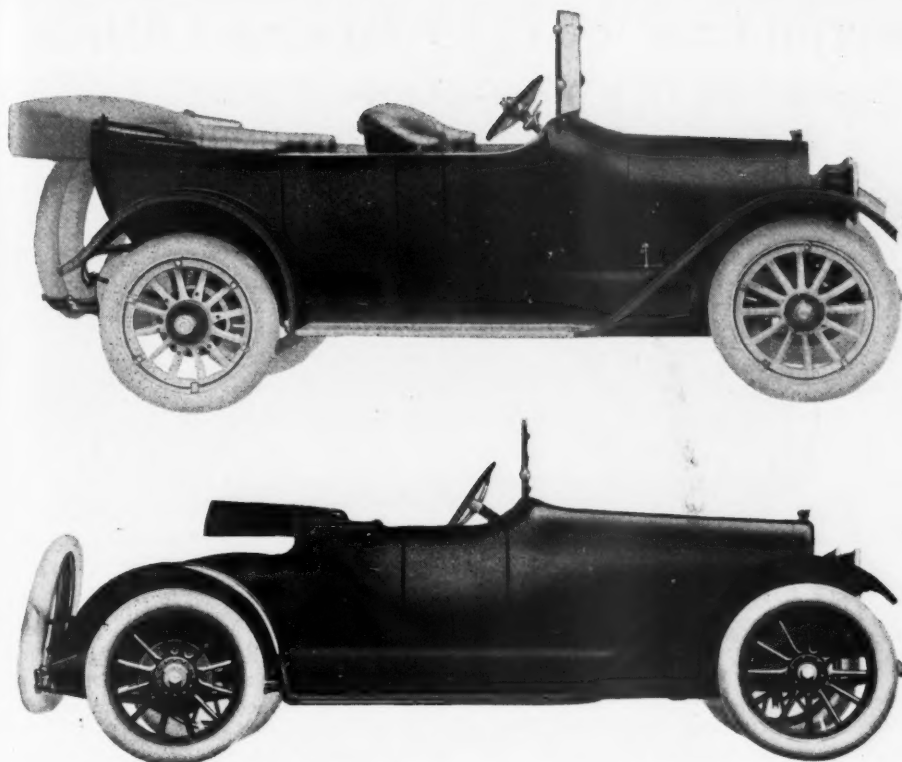
Stewart Vacuum Fuel Feed

Carburetion is by a Rayfield unit feeding to an intake manifold cast integral with the cylinders. This carburetor is fed by gravity by means of the Stewart vacuum gasoline feed which has been adopted by a number of makers for the 1915 season. This permits of the main fuel tank being placed in the rear of the chassis and still the use of air pumps, gauges, regulators, etc., has been eliminated.

Lubrication is by a combination force-feed and splash, using a plunger pump which circulates oil through the motor at the rate of $\frac{1}{2}$ gallon per minute. The storage battery used in connection with the Leece-Neville cranking system is the source of ignition current and it feeds through a Remy combination circuit-breaker and distributor. Cranking and lighting is by the two-unit Leece-Neville system.

The drive back from the motor is through a three-plate dry disk clutch lined with raybestos and mounted on ball bearings. Directly behind it and in unit with the engine, is the three-speed selective gearset with the shafts therein operating on ball bearings. From this unit the drive is taken by an open propeller shaft and transmitted to a bevel-gear, floating rear axle with a ratio of 4 to 1.

The body of the Haynes small six is clean-cut, a conservative streamline job



The upper illustration shows the carried-over Haynes four which has a new body and a new type of clutch. The latter is of the three-plate dry-disk type this season instead of contracting band. The new small six roadster is shown below

with a long hood, graceful cowl sweep, bell back, clean running boards, neatly-curved fenders and an ingenious arrangement of the instruments on the cowl dash. These are cleverly placed so that they will be within easy reach of the drive and still not all in one spot to break up the harmony obtained by balance. Leg room in both front and rear compartments is aplenty and the upholstery has been improved over past models.

The tires are 34 by 4 inches mounted on Firestone demountable rims.

Equipment Is Complete

Equipment is unusually complete, consisting of a motor-driven tire pump, one-man top, Never-Leak top cover, Collins curtains, extra rim, electric horn, headlight dimmers, and the other equipment called standard. The electric gearshift offered as optional equipment on the other models is not given on the small six. The gearshift control members are placed in the center and the steering post on the left side. The bodies on these cars are similar in appearance and appointments to the new six body. The illustrations herewith show the graceful lines of the hood and the rear end of the four touring car.

The general construction of the carried-over models is the same. The four-cylinder car, although better appearing than last season's four and refined throughout, is \$125 lower in price and the six incorporating the same changes in chassis and body, is \$250 lower.

The four has an L-head motor with a bore and stroke of $4\frac{1}{4}$ by $5\frac{1}{2}$ inches and pair-cast cylinders. The crankshaft is sup-

ported by three plain bearings. The six has the same bore and stroke but the crankshaft is supported by four bearings which have a total bearings length of 14 inches. The design of both four and six motors being the same one description will suffice for both.

The oiling system is a combination splash and gravity feed to the main bearings also constant feed to oil basins in the lower base. This is maintained by a plunger pump operated by an eccentric on the camshaft. The oil control is by an adjustable level in the lower crankcase and there is a sight feed on the cowl dash. Cooling is by centrifugal pump, while a belt-driven pressed-steel fan maintains a current of air through radiator.

The chassis details incorporate the new disk clutch and a three-speed selective gearset from which the power is transmitted to the rear axle through an unclosed propeller shaft with a universal at either end. Torsion strains are taken up by a torque rod parallel with the propeller shaft.

Jaw-Clutch Axle Drive

The rear axle is of the floating type with the drive to the wheels being through a six-jaw clutch on the six-cylinder cars and through a flange on the four-cylinder.

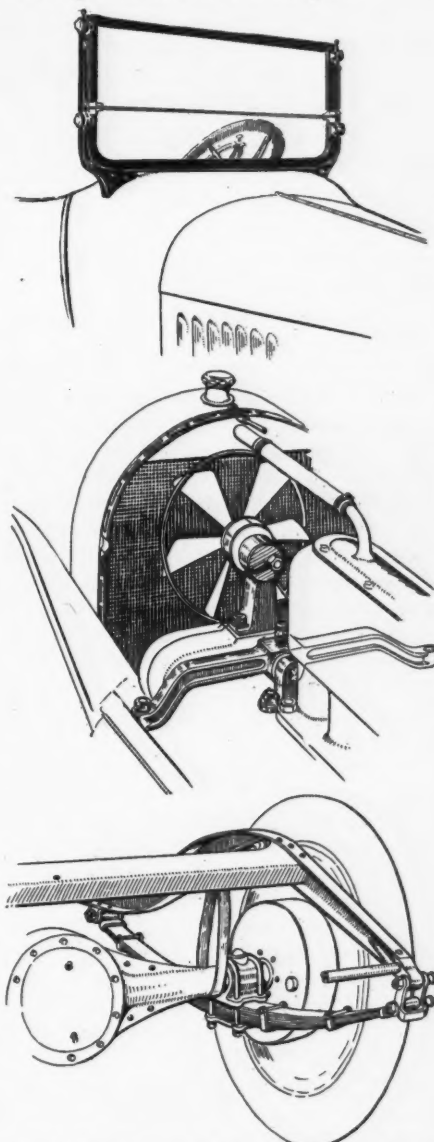
Engine cranking and lighting is by the Leece-Neville electric system in which the cranker operates through the flywheel of the engine.

The four has a wheelbase of 118 inches and the six 130 inches and the tires sizes are 34 by 4 and 36 by $4\frac{1}{2}$ inches respectively. The spring suspension on these

cars is, as heretofore, three-quarter elliptic in the rear and semi-elliptic in front with the conventional type of frame used.

ROAD RACE FOR WALLA WALLA

Walla Walla, Wash., Aug. 29—As a side attraction for Frontier Days to be held 6 days beginning September 14, the Walla Walla Fair Association will stage a road race from Spokane to Walla Walla, a distance of 215 miles, on September 15. Fifteen entries have been received and prizes amounting to \$2,000 have been hung up for the event. The big race is in charge of a committee composed of J. D. Moore and Harold Dahlen, local dealers and Chester Offner. The course traverses the famous Palouse country, across the Snake river country and through the Walla Walla valley. The route presents a varied assortment of roads from the finest macadam to stretches of sand in the Snake river district and hills that would make the eastern grades look like a turnpike.



The Haynes windshield and mounting is shown at the top. The method of motor suspension shown in the middle is by three points on the new six, the other cars having four points. The new spring suspension using long semi-elliptic rear springs, is shown in the lower illustration. Note the arched frame

Two New More Powerful Cars the 1915 Jackson Offering

Prices Lower Than Corresponding 1914 Models—A Six and a Four

TWO new cars, lower in price and retaining the same fundamental design as the 1914 cars, are announced by the Jackson Automobile Co., Jackson, Mich., for the 1915 season. This marks the passing of the three-chassis line of last season and brings in many changes both in body and chassis construction. The Olympic and Majestic, small and large fours, respectively, and the Sultanic, a six, have given way to a six and a four called the 48-six and the Olympic-46 respectively, the latter somewhat similar mechanically to last season's car of the same name.

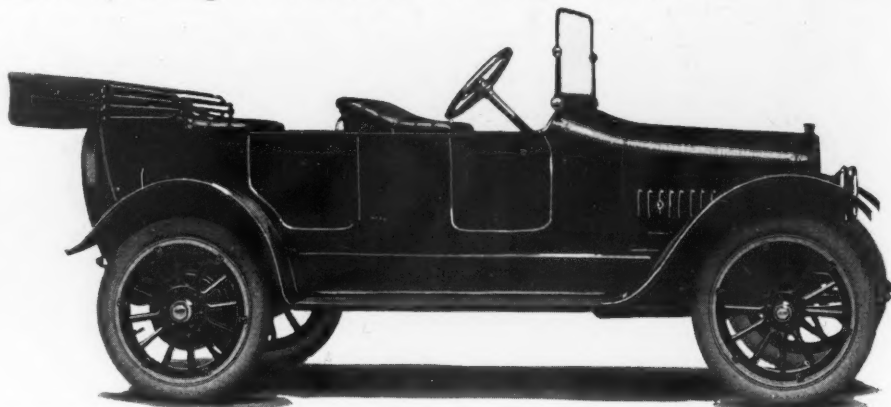
The new cars have more power, more grace, better equipment and are lower in price than the corresponding six and four of the past year. With a larger motor, the four in touring and three-passenger roadster form, now sells for \$1,375 as against \$1,385 previously. But this means more than a reduction of \$10, for the four of 1915 can be compared only with the Majestic of 1914, which listed at \$1,885. A greater price reduction has been in the new six, the 1915 price being \$1,650 as compared with \$2,300 and \$2,150 asked for the seven and five-passenger models of the six last season.

Adhere to Former Practice

Aside from the price reduction much refinement has been put into the new cars without going to extremes and abandoning tried-and-true Jackson practice.

Because the two new Jacksons really are not continuations of any previous models, it is hard to draw comparisons with former constructions. They have the latest of appointments, smooth-sided bodies, clean running boards, hoods sloping gracefully into cowls and sloping bonnets which carry out the general lines.

As compared with the four-cylinder Olympic model of 1914, the new car, Olym-



THE 1915 JACKSON FOUR-CYLINDER CAR WHICH SELLS FOR \$1,375 WITH A LARGER MOTOR THAN LAST SEASON'S FOUR

FEATURES OF THE 1915 JACKSON CARS

New six and four replace three 1914 chassis

Better bodies and appointments
Four motor larger than previous four engine

Prices are lower

Central control adopted instead of left

Stewart vacuum fuel feed on four

Auto-lite cranks on four, Delco on six

pic-46, has a longer wheelbase, being increased by 2 inches to 117 inches, while the motor has fully 5 horsepower more, its rating by the maker being about 45 horsepower. This is largely due to the use of the $4\frac{1}{2}$ by $5\frac{1}{4}$ -inch motor in place of the formerly used $4\frac{1}{4}$ by $4\frac{3}{4}$ -inch type. The cylinders are cast in pairs and the unit power plant construction of three point suspended type is employed. All valves are on the left and inclosed by cover plates.

Construction of the Motor

The cylinder dimensions give a stroke bore ratio of 1.17 to 1, and a displacement of 334 cubic inches. The crankshaft and camshaft, both of which are of drop-forged steel, are supported by three main bearings each. Connecting rods also are steel forgings. Steel tubing is used for the making of the wrist pins within the pistons. Valves are rather large and thus do their part to increase the power, their diameter being $2\frac{1}{2}$ inches. They are of tungsten steel and interchangeable. The pistons have three rings each.

Timing gears, housed at the front, are drop forged steel and iron, this combination being used to make them more silent. These gears drive the camshaft and magneto shaft in the usual way.

The cooling system of this engine is of the positive type employing a centrifugal

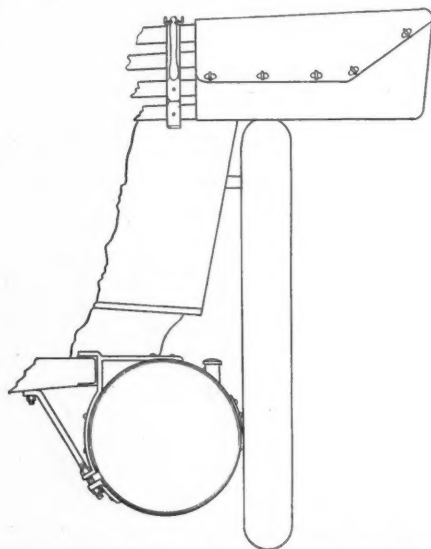
pump driven from a shaft on the right side. Back of the pump is the magneto, driven by the same shaft. Oiling is maintained by a force-feed and splash arrangement of conventional form. The oil is pumped from the reservoir at the bottom to the bearings and into the troughs, from which it is splashed by the moving rod ends up into the cylinders and to the various other surfaces.

Auto-Lite Cranks Used

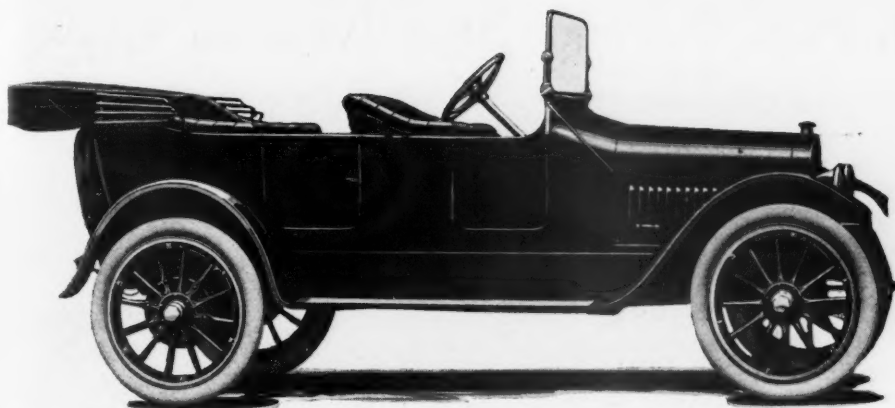
As heretofore on its four-cylinder cars, the Jackson company uses Auto-Lite cranking and lighting on this car. The cranking motor is mounted in a rather unusual position at the forward end of the engine, as last year, and drives through an inclosed chain and ratchet construction. This electric motor really rests upon its end, its armature shaft being vertical instead of horizontal.

The generator is placed on the right side of the engine on a bracket. It is driven also by a silent chain, and runs at a speed two and one-half times that of the crankshaft. The cranking speed is about 100 r. p. m. The system works at 6 volts, and there is a centrifugal governor to prevent overcharging of the battery or too high rate of charge due to high engine speeds. A Willard 120-ampere-hour storage battery, placed under the rear floor boards, is a part of the electrical system. In connection with the lighting arrangements, a dash lamp has been added.

As already brought out, the gearset is in unit with the engine, and gets its power through the intermediary of a leather-faced cone clutch. There are three speeds forward and reverse, and the main shaft and jackshaft are carried on ball bearings. These shafts have a diameter of $1\frac{1}{4}$ inch. Back of the gearbox there is a universal, after which the drive shaft enters a torsion tube which bolts through a flange construction to the rear axle housing, in accordance with conventional practice for such design. The axle used is a floating type made by the Salisbury company. It has a pressed steel



JACKSON CARS FOR 1915 HAVE A MORE RIGID EXTRA TIRE CARRIER



THE JACKSON 1915 SIX-CYLINDER MODEL, A NEW CAR SELLING AT \$1,650, \$500 LOWER THAN THE 1914 SIX

housing, and Hyatt bearings are used in the differential and wheels.

As with other Jackson designs, the new four uses elliptic springs both front and rear. This construction makes very easy riding, it is pointed out.

Center Gearshift Adopted

One change which marks a tendency of the times is the adoption of center gearshift and emergency brake levers instead of the left position heretofore used. Drive continues on the left. Although a cowl gasoline tank was incorporated on the fours last year, this has been removed entirely, and a vacuum system with tank at the rear has been adopted. The Stewart-Warner vacuum device for lifting the gasoline automatically to the tank portion of the outfit on the back of the dash is used. From this small reservoir it feeds by gravity to the carburetor.

Other minor changes are the adoption of much more rigid tire carriers at the rear, which hold the spare casings without vibration. A rigid iron at the top runs through the rear portion of the body to the framework, while the lower supports are attached to the tank.

Tires are 34 by 4 inches in size, the rears being of the non-skid variety. A Brewster green finish has been adopted which is very attractive.

Although very similar to the four-cylinder Jackson in outward appearance the new six is somewhat different. Built upon a wheelbase of 125 inches, this car still has all of the Jackson earmarks, however.

The motor is a $3\frac{1}{2}$ by 5-inch Northway which develops the horsepower indicated by the model designation—48. The design is an L-head unit power plant type with the cylinders cast in one block. Valves all are on the left side, and the upper half of the crankcase is in unit with the cylinder casting, making a compact construction. There are three separate cylinder heads in this engine, each covering two cylinders. When removed these plates or cylinder heads expose the pistons and valve heads. Heat-treated alloy steel bolts securely fasten the head pieces to the casting proper, and interposed between the two parts is a copper gasket, making a tight joint.

There is no departure from Northway standard design in this power plant. The lower part of the crankcase takes care of the oil reservoir, and at the front the spiral timing gears are completely housed. The centrifugal water pump is driven by shaft on the right side, and back of it is the Delco combination unit which will be spoken of more in detail later. The flywheel is completely inclosed, and at either side of its housing there is a crankcase arm integrally cast for supporting the unit. The front support is at the center of the front end.

The moving parts are all constructed of recognized standard parts. Drop forged connecting rods, camshafts and crankshafts are made as light as possible consistent with strength and their bearings are all of ample size. The crankshaft and camshaft are each carried on three bearings.

Method of Engine Lubrication

The oiling system of this engine is of the constant-level splash type, and the reservoir is located on the left front side of the oil pan. A plunger pump operated by the camshaft pumps the lubricant to the crankcase, after which it runs from trough to trough, and the cylinder walls and other parts get it by the connecting rod splash.

The standard Delco motor-generator unit is employed. This also takes care of the ignition through the use of a distributor. The unit is driven off the end of the pump shaft on the right rear side of the engine. Its gears mesh with those of the flywheel for starting purposes in the usual way, while when these are out of mesh, it drives from the pump shaft as a generator. It uses a Willard storage battery located under the rear floor boards as does the other car, and current from this is sent to the unit for cranking purposes when the motor-generator is operating as a motor temporarily.

Like the four, the new six uses a cone clutch and three-speed gearset. Drive to the rear is through an open propeller shaft which is fitted with two universals, one at either end. A torsion member parallels the shaft and takes the drive. The rear axle is a Salisbury floating type.

Like the four, the spring suspension is by elliptics all around. The frame is dropped to bring the car close to the ground and still allow full spring action.

Unlike the four, the six has its gasoline tank under the cowl with gravity feed to the carburetor. There is a supply tank at the rear, however. Tires are 36 by 4 inches and non-skids are used in the rear. Dark blue is the standard body color.

The six as well as the four has everything now looked for in the modern car in the way of equipment.

GASOLINE STORAGE HELD NUISANCE

Detroit, Mich., Aug. 31—A decision was rendered some time ago in the circuit court of Kent county, Mich., which may have a far-reaching effect inasmuch as the court held that the storage of a large quantity of gasoline within a few feet of a residence is a private nuisance.

The case was the one of Arthur W. Whittemore, who owns and occupies a house and lot adjacent to the Baxter Laundry Co., in Grand Rapids, Mich. The house of Mr. Whittemore is surrounded by residences costing from \$3,500 to \$4,500 each. The Baxter company, which does a dry cleaning business, uses about 15,000 gallons of gasoline per year and prior to the filing of the bill in the case, had placed in its yards two large steel tanks of the capacity of 10,000 gallons each, and had commenced excavating for the purpose of having these tanks placed in the ground in the northwest corner of its premises, which was the farthest possible point on its premises from its own building and immediately adjoining Whittemore's property, the nearest tank being about eleven feet from his property. Whittemore filed a complaint for a temporary injunction, claiming that this would be a private nuisance.

In a lower court it was held that it was a private nuisance. The Baxter company appealed to the higher court, which, in upholding the lower court's verdict, said in part: "We may grant that the storage of gasoline on premises adjacent to or adjoining the premises of another is not a private nuisance, per se. It might, however, become such, considering the locality, the quantity and the surrounding circumstance and would not necessarily depend upon the degree of care used in its storage.

"We also may concede that in this case every precaution that human ingenuity has conceived has been made use of in the construction of the tanks, as testified by experts. Considering, however, the dangerous character of the substance and its power as an explosive of which in this age of its wonderful development as a power to propel motor cars, traction engines and air ships we can well take judicial notice; and also considering human fallibility; that accidents in the operation of the most perfect mechanism will occur."

New \$675 Monarch Has Folding Seat Next to Driver

Four-Passenger Body Without Rear Doors—Gearless Differential

A FOUR-PASSENGER car with unique seating arrangements, selling at \$675 with full equipment except electric cranking, is the new small four-cylinder added to the line of the Monarch Motor Car Co., of Detroit, Mich., over which R. C. Hupp presides. The electric cranker, however, may be had for an extra \$25.

The body is a full streamline type and has creditable unbroken smoothness from front to rear. Outwardly it possesses somewhat the same appearance as its larger brothers of this make, though considerably smaller, of course. However, there is ample seating accommodation for four passengers.

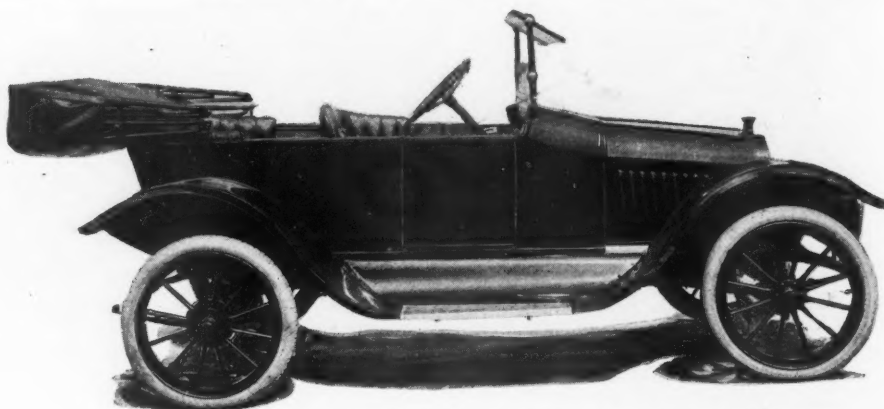
There are no rear doors to the body, and the right front seat is made so that it will fold up and allow room for passage into the rear compartment. The left front seat, which the driver occupies, is stationary, however. This arrangement is rather unusual, but nevertheless is very meritorious in a small car.

The wheelbase is 103 inches and with standard tread of 56 inches the car conforms to standard mechanical construction throughout the chassis. The motor is a thermo-syphon water-cooled block cast four of 2¾ inches bore and 4½ inches stroke. These dimensions give it a horsepower of about 20, which is ample for the car weight—in the neighborhood of 1,300 pounds.

Unit Power Plant Construction

The power plant is of the unit type, incorporating the gearbox as a component part. The whole is three-point suspended, having the single support at the front end on a cross member and the rear two supports by means of a 1¼ inch steel tube running through the crankcase just ahead of the fly-wheel housing and ending in brackets on the side members of the frame. This gives a light and strong support.

The crankcase is of the barrel form and



NEW MONARCH SMALL CAR ONE OF DETROIT'S LATEST PRODUCTS

FEATURES OF THE NEW MONARCH

- Folding extra seat in front*
- Motor, 2¾ by 4½ inches*
- Ward-Leonard cranker \$25 extra*
- Streamline body*
- Auto-lite generator stock equipment*
- Gearless differential in rear axle*
- Complete equipment*

the cylinder block bolts to it. A plate at the bottom gives access to the connecting rods and bearings. Valves and manifolds are on the right side, and two cover plates inclose the tappets and springs, which are of conventional construction. Crankshaft and camshaft are of drop-forged steel and each is supported by a large main bearing at either end. The timing gears are completely housed at the forward end.

An uncommon feature in connection with the front gears is the drive of the fan. This is by inclosed gear also, the idler gear shaft being extended through

the case, and on it the fan is mounted. This does away with any kind of external belt drive for the fan and since there is no extra gear used for the fan drive, makes a very good construction without complication.

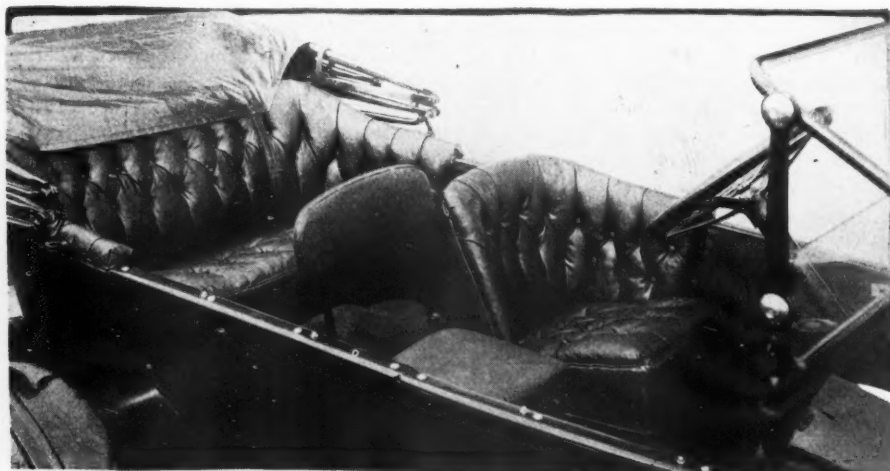
The lubrication of the motor is of the splash type with the level in the troughs under the connecting rods maintained by the automatic method, the air seal within the crankcase preventing more than the required amount of lubricant being drawn up from the reservoir and delivered to the troughs.

The carburetor, a float-feed Zephyr, is mounted high on the right side of the cylinder casting, having a very short intake pipe. There is only one opening into the casting, the distribution to the various cylinders being taken care of within the casting itself. The carburetor position is made possible due to the placing of the gasoline tank in the cowl, assuring direct gravity feed. The tank has 8 gallons' capacity with a 2-gallon reserve.

The Auto-Lite generator with which the new Monarch is regularly equipped is placed on a bracket on the left side of the engine and drives through gear at the front end. The ignition distributor is in unit with this generator and is of Connecticut make. Its current comes from the storage battery.

Bendix Drive for Cranker

The cranking motor is of the Ward-Leonard make, and is arranged to gear to the flywheel through a Bendix drive. That is, when the current is thrown on, the pinion automatically engages with the flywheel teeth, and as soon as the motor operates under its own power, automatically disengages again. The electric motor, which has a reduction of 15 to 1 as compared with the crankshaft speed, turns the latter about 130 r. p. m. The storage battery is a Willard. In instances where the car is ordered without the starting motor, it is pointed out that the engine is so arranged that this cranking feature may be



THE UNUSUAL SEATING ARRANGEMENT IN THE MONARCH. NOTE THE EXTRA FOLDING SEAT IN FRONT AND ABSENCE OF REAR DOORS

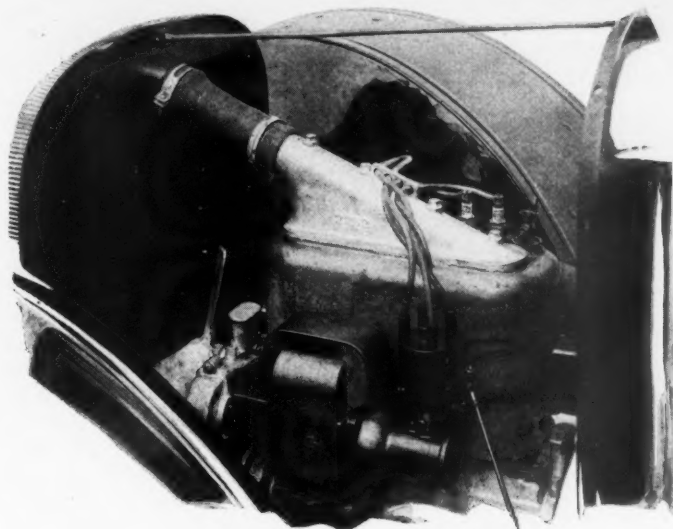
added at any subsequent time, since the battery is amply large to take care of the starter.

The gearbox, bolting to the fly-wheel housing, has three forward speeds and power comes to it from a multiple-disk clutch within the fly-wheel. This has its disks alternately of steel and raybestos-lined. The drive shaft is of the same form as used on the other Monarchs in that torsion members parallel the shaft on either side from a mid cross member back to the axle housing.

The rear axle is light and strong. It is of the gearless differential type.



The upper illustration is a front view of the new Monarch small car which sells for \$675 with Auto-Lite generator. At the left is shown the motor of this new car with the generator installed. The carburetor used is a Zephyr and ignition by Connecticut distributor, which is shown in the illustration.



That is, instead of having the usual spur differential gears within the bevel ring gear, there is a member of the gearless differential at either rear wheel. These members are fitted with a form of roller clutches which have the same action as the usual gears in allowing one wheel to turn faster than the other for rounding corners or under other circumstances. However, these roller clutches insure positive drive to both wheels in accordance with their traction. The gearless differential has been described on a number of occasions and has proven very successful in a number of installations.

Standard Running Gear

Brakes are of conventional type and act on 8-inch drums. The wheels are of wood of twelve-spoke type and carry clincher rims on which 30 by 3 tires are mounted, the rear pair being safety treads.

Steering is on the left and control in the center. There is nothing departing from the standard in the operation of the car. Even the usual quadrant above the wheel with spark and throttle levers is found.

The pressed steel frame is suspended by half-elliptic springs in front and elliptics in the rear. These latter are swiveled on both axle and frame, and their free action tends to easy riding. The leaves are 1½ inch wide, and lengths are 33 and 38 inches, front and rear, respectively.

Equipment in addition to that already mentioned includes one-man top and curtains, envelope, electric horn, rain-vision windshield, Stewart speedometer, tools, repair kit, pump and jack.

NOVA SCOTIA ROADS IMPROVED

Halifax, N. S., Aug. 31—John H. Wilson, a well-known Boston motorist, who each year makes a motor tour through Nova Scotia, has finished his 1914 pilgrimage and now he has written his opinion of what twelve months shows in the way of highway construction in that island. He declares that motoring through the province this summer is a far pleasanter pastime than it was one year ago because the roads are much better.

"Since motoring has become popular Nova Scotia has done little for the benefit of tourists, but the last year has witnessed quite a change," he states. "This is due to the fact that local pride finally has been touched. A year ago Yarmouth county stood first for superior roads while Hants and Halifax counties came close to being the worst. And the reason why these above others were signaled out was because their main highway between Halifax and Windsor was a much used road and for that reason the traveling public deserved better treatment.

"It is this particular stretch extending out through Bedford, Mount Uniacke,

to Windsor that shows improvement, though considerable work now is being done on stretches of road that lie between Windsor and Wolfville. That the highway within twenty miles of Halifax is better than it was is due in a large measure to the agitation of the motorists of Halifax. There is a motor club in the capital city, but it is not a particularly lively or enterprising organization, and what motorists have been able to accomplish is more through personal agitation than through any concerted effort on the part of the club. At least that is the way the situation is set forth by some members of the club."

PSYCHOLOGY PREVENTS ACCIDENTS

Madison, Wis., Aug. 31—Professor M. V. O'Shea, professor of psychology, University of Wisconsin, Madison, has discovered a method by means of which motor car accidents may be avoided. Professor O'Shea is in charge of instruction in psychology at the summer session of the state university and last week, addressing a class of teachers, he said that science has a way by which motorists can avoid collisions. It is this: Think of where you want to go; not the objects you want to avoid. To explain the formula, Professor O'Shea illustrated as follows:

"A friend of mine told me of an experience he had. He drives over a certain bridge each day. A little while ago he carried home his wife's new bonnet. All the way along he kept thinking to himself, 'Suppose I should go over this bridge with the bonnet.' Well, when he got to the bridge he tried hard to avoid going over, and just because he did try so hard not to, he did go over. Psychology has a reason for this."

Professor O'Shea said it was the same way when a teacher told her pupils not to do a certain thing. It is in effect, he said, a direct instruction to do that thing; as he put it, "It is a challenge to do that very thing, and every healthy boy instinctively takes up a challenge."

CYCLECAR MEET DISAPPOINTING

Columbus, O., Aug. 31—The first cyclecar meet in Ohio, which was held at Columbus Sunday, was a great disappointment to the large crowd which was attracted by the promoters. Instead of having ten or twelve cars participate as advertised, only six showed up. The Columbus Automobile Club made a vigorous effort to stop the races, which had been sanctioned by the American Cycle Car Association, but its efforts failed. It was claimed that the track was unsafe for fast driving. The Vixen won four events; the Scripps-Booth one and the Zenia the other. The Vixen by covering about 50 miles won the hour-race. Other cars entered were the Snail, Dayton and Lindenberg. An effort was made to break the mile record but failed.

Pilgrim a New Small Car at \$650 With Electric Cranker

Four-Passenger Body Is Hung Low—Streamline Appearance—Wire Wheels

ONE of the latest small cars to come to the market is the Pilgrim, announced by the Pilgrim Motor Car Co., Detroit, Mich. This new car features nothing radical in fundamental construction but is equipped with a body of unusual streamline design and with electric starting and lighting sells for \$650 in four-passenger form. This new car is from the designs of W. H. Radford, a former engineer for the Warren company.

Low-Hung Body a Feature

The outstanding feature of the new-comer is the body which has a low rakish appearance, bell back, sloping hood with a rather long cowl, graceful fenders, rounded radiator and clean running boards. Up-to-the-minute small-car design is used throughout and the units are of standard make and design. The motor, for example, is a four-cylinder, thermo-syphon cooled, and the drive by cone clutch shaft, rear axle gearset and, bevel differential and the steering left with center control levers. The equipment has added much to the attractiveness of the car at the price. Wire wheels give it a desired touch. A one-man top, together with the regular appurtenances make it a decidedly well-equipped car of its class.

Though the Pilgrim is a small car and weighs but 1,300 pounds fully equipped, it is amply roomy for four passengers on the wheelbase of 100 inches. Tread is standard at 56 inches, and the body is constructed of sheet steel, has 18-inch doors and 28 inches of leg room in both forward and rear compartments. The fenders which are domed conform closely to the wheels and bring the design up to the minute. The fenders and running boards are 9 inches wide, the running board having a length of 57 inches. These parts are made of pressed steel. Wheels are of demountable wire type and carry 30 by 3-inch tires



The four-passenger Pilgrim Detroit's latest small car which sells for \$650 with electric starting and lighting equipment. It has a 100-inch wheelbase and equipment includes a one-man top

FEATURES OF THE NEW PILGRIM SMALL CAR

Four-passenger car sells for \$650

Streamline body

Rounded radiator with filler cap under hood and one-man top

Wire wheels standard equipment

Motor bore and stroke, 3 1/8 by 4 inches

Auto-Lite electric system

on interchangeable clincher rims. The gasoline tank is placed under the cowl and has a capacity of 8 gallons. The motor is a four-cylinder water-cooled type of 3 1/8 inches bore and 4 inches stroke, block cast with all valves on the right side and mechanism completely inclosed. Valves, of conventional type, are 1 1/2 inch in diameter and have adjustable push rods. The flywheel is inclosed but the housing does not cover the gearset. This is part of the rear axle unit. Manifolds are a little out

of the ordinary in that the cast exhaust manifold alone occupies the right side, bolting to the cylinder casting and having an opening to each exhaust port; while the intake passages are cored within the cylinder block itself and pass from the opposite side where the Schebler carbureter is placed, to the vertical pipe from this carbureter.

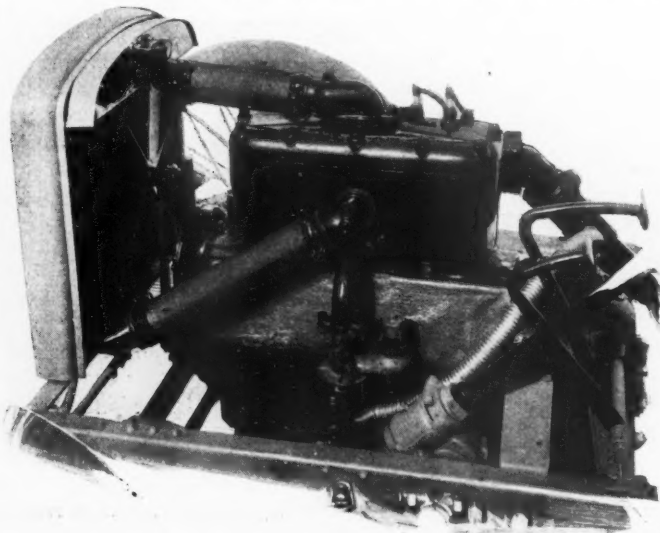
Cylinder Head Is Removable

The cylinder head is removable and bolts rigidly in place. It goes over the entire top of the casting and when removed exposes valves, waterjackets and cylinders. The working parts of the motor are all made of conventional type. There are three main crankshaft bearings. These measure 1 3/4 inches in length for the front and crank pins and 3 inches for the other two. Pistons are each fitted with three rings, and the camshaft has its cams forged integral. Gears at the front end drive it as well as the lighting generator.

Cooling is by thermo-syphon, employing a 12-inch fan, belt-driven. The radiator is a McCord vertical tube type with horizontal fins. The core has four rows of 1/4 inch tubes. Ignition is taken care of by Connecticut distributor in connection with a Willard storage battery rated at 6 volts and 35 amperes.

This battery also is used with the lighting system and for cranking purposes. The Auto-Lite generator, located on the right side of the motor has the ignition distributor in unit with it, and serves for charging the battery. The starting unit has not definitely been decided upon, but it will utilize this same battery current for turning the crankshaft.

The drive back of the motor is through a cone clutch, leather-faced and a conventional form of drive shaft inclosed within a neatly designed torsion tube which is fitted with a Spicer double universal at the front end. In accordance with usual prac-



Four-cylinder motor of the Pilgrim showing large water pipes for the thermo-syphon cooling and the rounded radiator with filler cap under the hood line

tice when the gearbox forms a unit with the rear axle, this box is inter-positioned between the tube and the axle housing, bolting to each through flange constructions. The gearset is of the Northern Engineering Co.'s special design and gives three forward and reverse speeds. It utilizes Hyatt roller bearings, and the drive shaft is four-splined, insuring strength. The countershaft is mounted below the main shaft and thus gets good lubrication.

The rear axle is semi-floating and has Hyatt bearings also. The drive is through bevel gears with a ratio of 4 to 1, while the propeller shaft and drive shafts are all of chrome-nickel steel having a diameter of 1 inch. Due to the torsion tube and its diagonal brace rods all torsional strain and drive strain are carried to the forward cross member of the frame through the yoke at the front end of the tube. The

brakes are external and internal, operate on the hubs and use 8 inch drums. of very easy riding. The frame is of pressed steel, having a channel 3 inches deep, and a 3-inch pick-up at the rear over the axle. The top of the frame is 18 inches from the ground and there are the usual number of cross members.

Steering is on the left and control in the center. There are no levers on the wheel, the accelerator pedal being so arranged that it can be either used in a fixed position or as the ordinary accelerator. The spark advance is on the dash. The steering gear is of the worm-and-wheel type, fore and aft, and the wheel has a diameter of 18 inches.

Standard equipment, in addition to that already mentioned, includes one-man top, top envelope, storm curtains, windshields, speedometer and tools.

Mexico Plans to Push Guayule Rubber Factories to Resume Operations at Once

TORREON, MEXICO, Aug. 20—It is expected that all of the guayule rubber factories in Mexico will have resumed operations by September 1. Preparations are being made by the Intercontinental Rubber Co., which is composed of Aldrich-Rockefeller interests, to run all of its factories, including the large plant in Torreon, full time. Gangs of men have also been set to work cutting the guayule shrub upon the 2,000,000-acre Cedros hacienda, in the state of Zacatecas, that is owned by the company, and a large supply of the raw product will be on hand at the different factories in a short time.

It is stated that the recent big advance in the price of rubber is stimulating activity in the guayule industry, and that there will be several other large factories established in the Torreon district and in the upper border region of Texas if prices continue high.

Now that the constitutionalists have cleared Northern Mexico of disturbances and an era of peace is in sight, members of the Madero family have returned to their homes and will soon have their large guayule manufacturing interests going again. So far as can be learned, none of the five rubber manufacturing plants which are owned by the Maderos was destroyed by the warring factions, and all they need before resuming operations is an overhauling.

Next to the Intercontinental Rubber Co. the Maderos are the largest owners of guayule properties in Mexico. It was reported from time to time during the 2 or 3 years before the beginning of the revolutionary period of the country that the Maderos had sold their rubber guayule holdings to the Aldrich-Rockefeller syndicate for \$15,000,000 gold. These reports proved unfounded and the factories and the land upon which the wild shrub grows

are still in the possession of the Maderos.

Some idea of the importance which the guayule industry had attained in Mexico may be had by the statement that the value of the crude rubber exported from the United States consular district of Torreon during the 12 months immediately preceding the revolutionary outbreak 4 years ago was approximately \$30,000,000 gold. The Intercontinental Rubber Co. alone is said to have invested more than \$25,000,000 in the industry, including the cost of the manufacturing plants and its extensive landed holdings.

During the 4 years that the production of rubber from the guayule shrub has been practically suspended the supply of raw material has increased enormously. Millions of acres of ranch lands from which the original guayule shrubs had been removed are again overgrown with the valuable plants. The shrub also has been propagated artificially upon large areas of land. In some localities as much as 2 tons per acre of the shrub can be gathered. Its value is about \$180 gold per ton.

Should a famine of tree-rubber be created in the United States from any cause the guayule shrub is capable of making up the shortage to a large extent, it is claimed by men who have a practical knowledge of the industry. The possibilities of this new rubber product are enormous, the experts say. The territory of northern Mexico and southwestern Texas, which is adapted to growing the guayule shrub embraces many millions of acres of land that is practically worthless for any other purpose. The shrubs require no attention and they reach a commercial size in 2 to 3 years. If cut off at the roots the plants may be made perpetually reproductive.

The Intercontinental Rubber Co. employed a corps of American botanists on

its Cedros hacienda for the purpose of conducting exhaustive experiments with the shrub with the view of determining the best method to be adopted for its propagation. This research work extended over a period of 3 years and the results are said to have been most satisfactory.

FRANKLIN PROPOSES LOW-GEAR TEST

Syracuse, N. Y., Aug. 31.—The Franklin Automobile Co., which conducted a national fuel economy run on May 1, in which ninety-four of its dealers participated, has prepared for another astonishing demonstration of the air-cooler. This is to take the form of a 100-mile low-gear non-motor stop cooling demonstration on Thursday, September 24, in which all its dealers in this country and in Canada will participate. The rules for this test are as follows:

- 1—Run to be made in the Franklin six-thirty touring car, roadster, sedan, coupe, or berlin. Roadster and coupe to be used only where impossible to obtain other cars, as but one observer can be carried.
 - 2—Run to be made Thursday, September 24, regardless of weather and road conditions, and to start at 8 o'clock a. m.
 - 3—The run to be supervised or observed by two or more disinterested persons, one or more to be representatives of the press, and one to be an officer of the local motor club if possible.
 - 4—The run to be attested before a notary public.
 - 5—Record to be made of time run starts and ends.
 - 6—Car to be absolutely stock and have no special attachments, adjustments or arrangements of any kind.
 - 7—Engine to be kept running throughout the demonstration.
 - 8—Cooling system is not to be touched or supplied with anything during the run.
 - 9—Engine to depend entirely on normal lubrication. No oil to be supplied during the run, and no oil to be put in the gasoline.
 - 10—Check speedometer reading and set trip register at zero at the beginning of the run in order to be sure of making 100 miles.
 - 11—Hood not to be raised during the run.
 - 12—Drain out all the oil before the run and measure the oil you put in. Then measure the oil left at the end of the run and report amount used.
 - 13—Fill the gasoline tank full. At end of run drain tank and report the amount used.
 - 14—Run to be accomplished within 10 hours from the start.
 - 15—Speed to average for the 100 miles not less than 10 miles per hour. To do this, maintain a speed between 10 and 13 miles all the time.
- Note—A time limit of 10 hours is made in order that there can be no charge of favoring the engine by slow running. In going 100 miles on low gear in 10 hours, each cylinder fires the same number of times as in 336 miles on high gear.

HOOSIERS PLAN TENT SHOW

Indianapolis, Ind., Aug. 29.—The fall motor show to be held at the Indiana state fair the week beginning next Monday, will have approximately sixty exhibitors, occupying 22,000 square feet of space in a tent. Only 1915 cars and parts and accessories are to be shown, together with several special exhibits. About 150 cars will be displayed.

Special exhibits are to be made by Charles Black of this city, who will show a gasoline car he built in 1891; by the Indianapolis Motor Speedway Co., the Hoosier Motor Club and the Howe Engine Co. There will be band concerts daily. No admission fee is to be charged, except the fee that is charged to enter the fair grounds. The show will be open daily from 9 a. m. to 6 p. m.

New Air Cranker Operates Like an Electric System

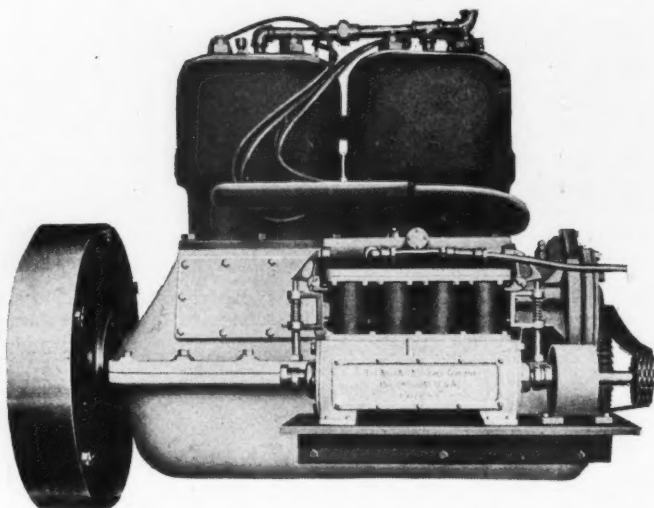
Compressor Acts as Air Motor-generator—Control by Automatic Governor

AN air-cranking system which is somewhat similar in its general operation to the units of an electric starting and lighting system has been brought out by the Auto Air Appliance Co., Baltimore, Md. Its operation is like that of an electric system in so far as it generates its own power, in the form of compressed air and while the gasoline engine is running. Later this stored energy is used to crank the engine. It consists essentially of a four-cylinder compressor-motor as it is called connected by silent chain to the engine crankshaft, this compressor pumping air to a tank when in operation and when desired for starting the air from the tank is sent back through the compressor which turns over the engine. The entire apparatus necessary for this installation consists of the aforementioned compressor, which is 12 inches long, 9 inches high and 5½ inches wide, a storage tank, 42 inches long, gauge, valves and an automatic governor for controlling the flow of air to and from the compressor, its functions being analogous to that of an automatic cut out in an electric lighting system.

One of the illustrations on this page shows the arrangement of the parts when installed. It will be seen that the compressor-motor is attached to the crankshaft of the engine by chain and from the compressor two pipes, lead, both terminating in the storage tank. One pipe sends air to the tank and the other is a feed pipe for air from the tank to the compressor.

When the gasoline engine is started the compressor starts pumping air to the tank to a predetermined maximum pressure and when this pressure is reached an automatic governor disengages the compressor clutch, thereby stopping further flow of air to the tank. When the pressure in the storage tank drops to a predetermined minimum

Here is shown a new type of air cranking motor installed. It is connected to the engine crankshaft by silent chain and when desired for starting, air from a storage tank is sent through this compressor which turns over the engine. When the latter has started the compressor automatically ceases to be a motor and starts sending air to the storage tank



pressure the compressor again starts sending air to the tank. This arrangement then is similar to electric starting systems in which an automatic cutout is used for connecting and disconnecting the generator from the battery circuit, only in this case a governor disconnects and connects the compressor from the air line.

In order to crank an engine with this device it is necessary only to press the starting button shown in the illustration this operation admitting air to the four-cylinder compressor and the compressor being connected with the engine crankshaft turns it over but the moment the pressure on the button is released the compressor ceases to be a motor and starts pumping air to the storage tank. The release of the starting button puts the governor in operation to perform this function.

When acting as a compressor, only two of the four cylinders are in use and according to a statement from the company, the tank can be filled with air to a maximum

pressure of 250 pounds in 5 minutes if the car is operating at a speed of 30 miles per hour. This is increased to 15 minutes should the car be traveling 10 miles per hour. A test by the maker has shown that with air at 235 pounds pressure in the tank, a 30-horsepower engine can be started thirty-five times without exhausting the tank. The turning speed of the gasoline motor is 200 r. p. m.

The compressor-motor is built like an ordinary gas engine. The cylinders, pistons, rings, etc., are iron castings, the crankcase aluminum and the connecting rods drop-forgings. Oiling is by splash.

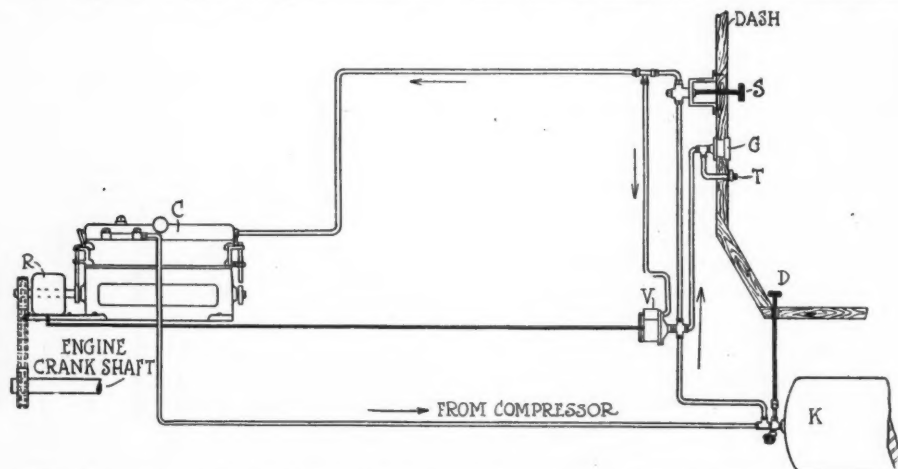
It is obvious that with a storage tank with 250 pounds air pressure, some of this can be used for purposes other than cranking. The device just described uses surplus air for inflating tires and for cleaning.

CANADA NOT FEELING WAR

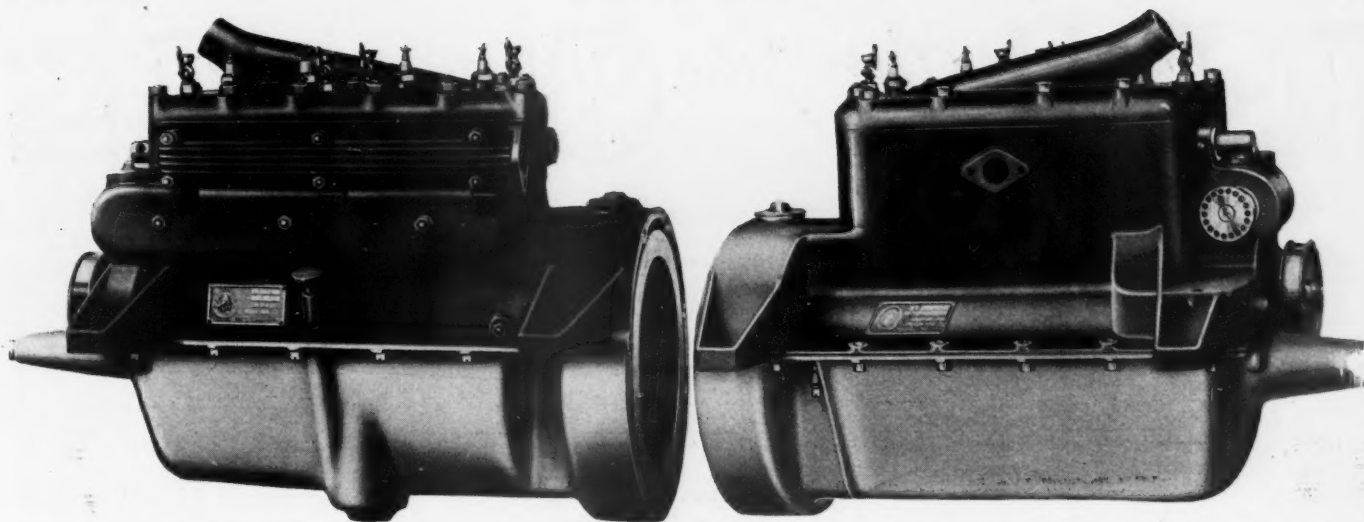
Winnipeg, Can., Aug. 22—The war is having little effect on the motor business in western Canada as far as the lower priced cars are concerned. The local Ford branch has made over seventy-five sales since the announcement of reduction in price, and the Breen company report a good demand for the Studebaker cars it handles. With the trade to England fully open again by the sea routes, business has gained a more hopeful tone, and if conditions continue as favorable as at the present time the American manufacturer should find little falling off in 1915 business.

MADE BY MOTOR MECHANISM CO.

In the August 27 issue of Motor Age there appeared on page 36 a description of the Ruetschi combination planetary and selective gearset. It was stated this is a product of the Motor Engineering Co., Cleveland, O. This is incorrect, as the gearset is made by the Motor Mechanism Co., Cleveland, O.



This shows the new air cranking installation and the relative location of the parts. The motor-compressor C is connected to the crankshaft through gearing R and silent chain. When the engine is running the compressor sends air to the tank K fitted with night valve D. When it is desired to start the engine the button S is pressed and air flows from the tank back through the compressor which cranks the engine. The connection T is for inflating tires and G is a pressure gauge. V is the automatic governor whose functions are analogous to that of a cutout in an electric system



Left and right side of the new motor brought out by the Continental Motor Mfg. Co., Detroit. Note the removable cylinder head, the location of the magneto set transversally in front, the clean sides and the fact that the cylinders and upper portion of the crankcase are cast as a unit. The carburetor is attached to the flange shown in the right illustration

New Continental Motor for Small Cars

Clean Design—Magneto Set Transversally

TO meet the demand for a small, high-speed motor, the Continental Motor Mfg. Co., Detroit, has designed a model which is the result of careful study of conditions both here and abroad.

This new Continental, called the model U, is the smallest motor which has yet emanated from the plant.

The new Continental is a unit-power-plant type which is adapted for any one of the standard makes of clutch and transmission units now on the market. The cylinders, which are cast in a block, have a bore of $2\frac{3}{4}$ inches and a stroke of 4 inches.

Outwardly the new Continental motor has a distinctive appearance. The upper half of the crankcase is in unit with the cylinder casting, and as is becoming quite common with this construction, the cylinder head is made removable. It is held down by a number of steel bolts and allows for the exposing of all the valves and pistons. The other main unit is the lower half of the crankcase which carries the oil pan. The motor is arranged for four-point support, arms running outward for attachment to the side rails of a chassis, and being a part of the cylinder block casting.

The valves are all on the left side together with the exhaust manifold, while the carburetor opening is on the opposite side. A cored passage runs across within the cylinder block to the valve side where the gases are distributed internally to the four cylinders. The carburetor bolts directly to the casting, the flange for attachment being shown in the illustration above at the right.

The magneto drive is transverse at the front end, there being a spiral gear mechanism driving the cross shaft to which the magneto is attached. The magneto is

carried on a bracket cast integral with the cylinder block. Just ahead of the magneto and its drive, the cooling fan is mounted and is driven by a belt. This arrangement of magneto and carburetor leaves the sides of the motor free from any complications.

The lower half of the crankcase carries at its forward end the complete starting crank assembly, including the crank itself, which is rather an unusual construction.

Thermo-syphon cooling is employed, and in casting the cylinders and crankcase as a unit the water jackets are carried the full length of the cylinder bore, thus insuring efficient cooling. Large water connections also do their part. The lubrication is in accordance with Continental practice, being a combined force-feed and splash system whereby the oil pump supplies individual troughs under the connecting rods. The ends of the connecting rods dip into these troughs and splash the oil up into the cylinders as well as lubricating the bearings.

The moving parts are all of standard Continental construction. The pistons have three rings each, while the crankshaft is carried on three bearings and the camshaft on two. The valves have the standard form of tappet construction and adjustment. The weight of the motor including the flywheel and regular equipment, is 210 pounds. It is expected that quantity production on this new Continental will be begun about the first of the year, while sample motors may be had during November and December.

CHANCES IN VENEZUELA

South Bend, Ind., Aug. 31—Thomas W. Voetter, of Fort Wayne, United States consul at LaGuaira, Venezuela, has been in this country the last few days and tells of the splendid trade opportunities that

now await this country in South America.

"Never have the opportunities been so good," said Mr. Voetter, "for extending trade relations between the United States and South American countries as they are today by the reason of the war in Europe. In Venezuela in particular the path is open to the manufacturers of this country to secure virtually a monopoly of the trade. Last year this country passed Great Britain and Germany in the value of Venezuelan imports. Now that these latter countries are at war there will be an almost entire cessation of shipments to Venezuela from their ports and the way is clear for our people to get the entire business.

"Commerce is not handicapped between Venezuela and the United States by reason of a lack of transportation facilities. We have an excellent weekly service of an American line of steamers that reaches our principal ports. None of the shipping on American products is in foreign bottoms. For the last 3 years the growing seasons have been unusually dry and the crops have not been up to the average. This has brought some depression in business, but prospects are brightening. The opening of the Panama canal doubtless will give greater impetus to trade, because it will put us in close touch with the ports on the Pacific."

MANY NATIONS REPRESENTED

Detroit, Mich., Aug. 31—A count was made recently among the working men at the Ford Motor Co., to find out how many foreigners were employed and to what nationalities they belong. This resulted in finding that the 9,031 foreign workers belonged to twenty-two different nationalities. The Poles numbered 2,677, then came the Russians, 2,016; Roumanians, 750; Italians, 690; Germans, 606; Austrians, 388; English, 380; Syrians, 330; Hungarians, 269; Canadians, 226; Servians, 210; Irish, 148; Scotch, 133; Lithuanians, 73; French, 55; Hollanders or Dutch, 26; Danes, 21; Croatians, 13; Turks, 8; Belgians, 6; Japanese 3; Australians, 3. Total 9,031.

The Realm of the Commercial Car

Chamber of Commerce Discusses Use of Trailers with Trucks



A strange spectacle was witnessed recently in a Kansas oat field when two motor cars were pressed into service to take the place of horses which the owner had been compelled to unhitch because of the extreme heat. It was on the farm of G. L. Hamm, near Williamston, and the machines belonged to his brothers-in-law, J. D. and M. F. Martin, both of Wichita, Kans. Hamm had a fraction less than a 40-acre patch of oats and when his horses succumbed to the heat he believed the remaining third of his crop would be almost a total loss from threatened rain. The Martin brothers arrived, jocularly remarked that they would attach their motor cars to the binder and Hamm believed them serious. The joke was carried out, but it was discovered that the machines were capable of performing the work. The job was finished in a few hours at a rate of 30 acres per day.

INQUIRIES addressed to members of the National Automobile Chamber of Commerce regarding the desirability and economy of using trailers with standard motor trucks have been answered in detail by the following twelve companies: Avery, Baker, Federal, General Motors, Kissel, Locomobile, Packard, Pierce-Arrow, Speedwell, Velie, Waverley and White.

"The preponderance of opinion is decidedly against the practice except under very favorable conditions, such as level, smooth, hard roads, slow speed and proper handling," reports the N. A. C. C., after this census." Given such conditions the standard truck may be used successfully for hauling trailers, but under no circumstances should a trailer be used without the consent of the manufacturer, as the guarantee does not contemplate such use. Under any other conditions the practice is of very doubtful economy; therefore truck manufacturers do not encourage the use of trailers unless they examine the field of operation and know that their trucks can handle the work with trailers under the conditions.

"The standard truck is designed for a definite load and speed and as a rule is not rugged enough for this service, which is most likely to be done outside of cities, where roads are poor and grades steep.

"For use as a tractor, the truck should have a powerful engine, strong construction throughout, especially liberal bearing surfaces and a clutch that will engage and start the load without a jerk. The horsepower developed and the gear ratio should be proportionate to the weight of the vehicle and trailer with loads.

"Successful employment of trailers except under unusually favorable conditions calls for the special construction of tractor trucks and of trailers designed for use with them. Such a tractor should have at least five or six possible speed changes, if gasoline economy is to be maintained. An electric tractor requires increased battery capacity.

"Wagons and drays built for use with horses have been used as trailers with motor trucks with some success but they are likely to shake to pieces soon unless the speed is reduced so much that there is little if any economy. As they are built for a speed of about 4 miles an hour and road shocks are increased as the square of the speed, they cannot long resist the jolts and racking over rough roads at 8 to 10 miles an hour. Moreover, the bearings cannot be lubricated properly at these higher speeds and they quickly wear out.

"To obtain durability and efficiency, trailers must be built with the same type

of bearings and sturdy construction as the tractors, although the trailer does not need to be built quite so heavy as the truck.

"There is believed to be a field for hauling with trailers and that motor truck dealers might perhaps handle trailers as a means of stimulating business, provided their use was approved by the makers of the truck. At least four wagon companies have undertaken the manufacture of special trailers for motor trucks. These are the Troy Wagon Works, Shadbolt Mfg. Co., Watson Wagon Works and Buffalo-Pitts Co.

"The public demands a combination of truck and trailer that will haul from 10 to 12 tons. A good four-wheel trailer to carry 5 tons weighs about half as much as a 5-ton truck; that is, 2 tons or more. The trailer should be as light as possible, however, consistent with the load to be carried, the maximum speed to be attained, and rough road conditions. Although the weight and capacity of the trailer should be dependent upon the relation of the engine power to the weight, speed and capacity of the truck, the trailer should not have a load capacity exceeding that of the truck itself.

"Whether two-wheel or four-wheel trailers should be used is determined by the particular nature of the work to be done.

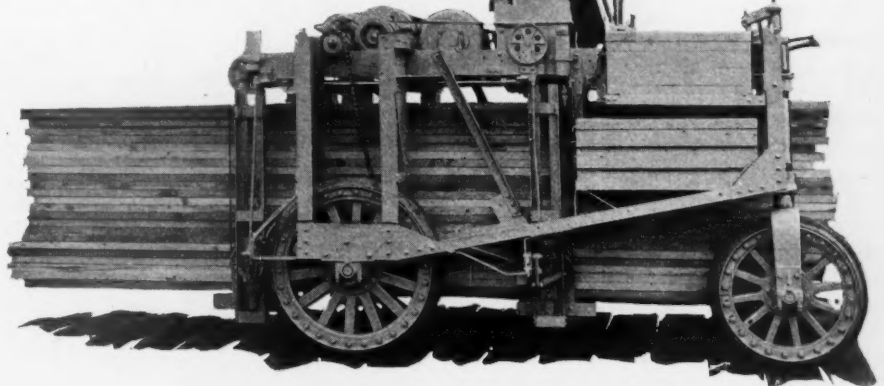
Long timbers, sections of pipe, I beams, etc., can best be handled with the two-wheel trailer, the front end of the load being carried on the rear end of the truck, with a suitable support having universal action. The four-wheel trailer is preferable for bulk material and miscellaneous goods, for two reasons: first, the object of using a trailer is to secure economy, and as the four-wheel trailer has inherent stability, it can be left for loading and unloading while the truck picks up and hauls another trailer, thereby cutting down the idle time of the truck; and second, the two-wheel trailer and truck are rated as a single six-wheel vehicle by the highway authorities in the states which have passed laws or made regulations limiting the gross weight of vehicles using the public highways.

"In Massachusetts, New York and Maryland the permissible weight of vehicles and load is 28,000 pounds; in New Jersey it is 26,000 pounds and in Pennsylvania 24,000 pounds. Consequently, a combination of truck and two-wheel trailer weighing only 10,000 pounds empty could not carry a total load of more than 9 tons in the first three states named, nor more than 8 tons in New Jersey, and 7 in Pennsylvania. A four-wheel trailer, however, probably would have to be considered a separate vehicle."

BROOKLYN USING TRACTOR-TRAILER

A 5-ton Saurer tractor-trailer dump outfit, a product of the International Motor Co., has been placed in service by the Borough Asphalt Co., Brooklyn, N. Y. This truck is used in connection with a special dump trailer. The trailer body has a capacity of 5 tons, or 100 cubic feet, and is equipped with a Wood hydraulic hoist, dumping from the rear. It is unusual to mount an automatic dump mechanism on a trailer. The body is of wood 10 feet 6 inches long, 4 feet 6 inches wide at front; 5 feet wide at rear, 2 feet high, lined with sheet steel on the inside, with a ½ inch asbestos lining between the wood and steel sides, and is designed to carry hot asphalt, broken stone and sand. The dump mechanism of this trailer body is controlled from

the driver's seat on the tractor, and raises the body 45 degrees. The oil pump for operating the hydraulic hoist is mounted on the driving shaft, and the fluid is forced back into the hoist on the trailer



ROSS ELECTRIC LUMBER CARRIER

through flexible pipe connections.

Most trailers have the dump arrangement at the bottom, but for a number of reasons it is not advisable to handle hot asphalt in this manner. There would be considerable disadvantage in closing the dump opening if hot asphalt was dumped through the bottom, owing to the clinging nature of this substance, which prevents tight closing. It is necessary to have a very tight body for transporting hot asphalt, as it is handled at a temperature of 300 degrees and must be kept hot until worked into position on the streets by the workmen.

Important in this tractor-trailer construction is the universal coupling which links the two units together. This connection is by a type of "fifth wheel" which permits quick attaching and demounting. The wheelbase of the Saurer tractor is 10 feet 8 inches. The company reports most satisfactory results.

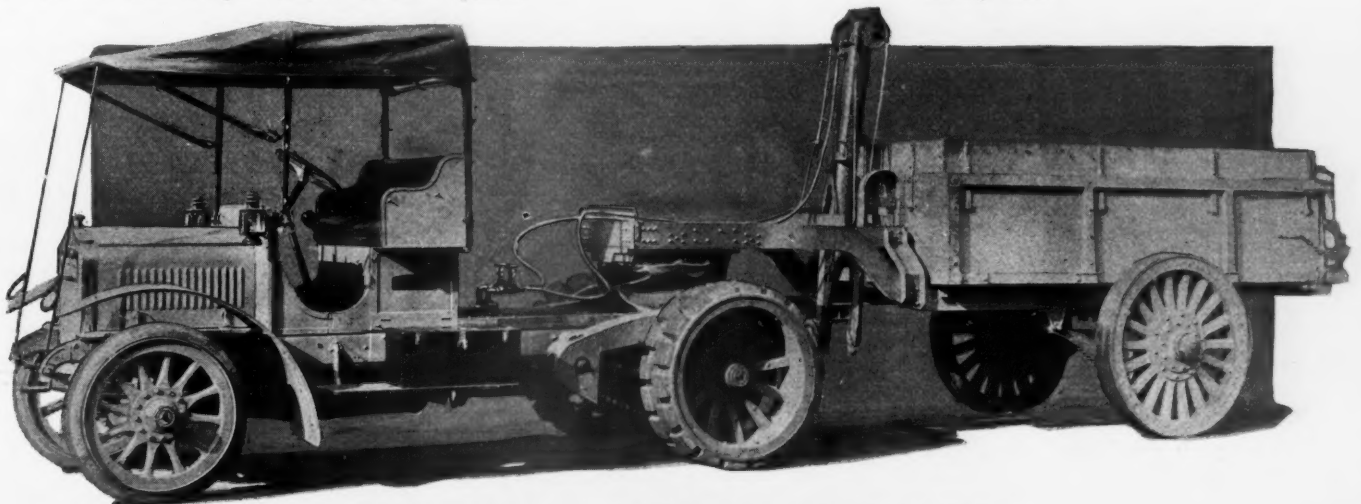
ROSS ELECTRIC LUMBER CARRIER

H. B. Ross of Seattle, Wash., is the inventor and manufacturer of the Ross electric yard lumber carrier, which was developed and built in Seattle primarily to handle lumber in and around saw mill plants.

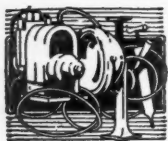
In using this electric carrier, the lumber may be piled on two-wheeled

trucks in the ordinary way, and the truck then is picked up by the carrier, or the lumber may be piled in units of 2,500 to 3,500 feet, upon which two cross pieces, or bolsters, which are picked up by the four hooks provided on the carrier for that purpose. When the load is ready, the carrier is driven over the lumber, either forward or backwards, and the driver throws the hooks underneath the ends of the bolster or under the side of the lumber truck, by means of a lever at his right hand, and the load is hoisted by power. The operator does not leave his seat either in loading or unloading, and requires no helper.

The power for both the hoist and for propelling the vehicle is furnished by a standard Westinghouse 80-volt vehicle motor, of about 5 horsepower normal rating, but good for 25 horsepower in emergencies. The power is taken from the motor by means of a link belt silent chain to a double clutch of the split-ring type, the vehicle, and the other to the hoist. The controller has six speeds forward and four reverse, and the machine is geared to operate at 8 miles per hour with the ordinary load.



TRACTOR-TRAILER USED BY BROOKLYN ASPHALT CONCERN



The Accessory Corner



Hoosier-Ford Master Vibrator

MANY types of master vibrators for Ford cars have been brought out but one of unusual construction is the Hoosier announced by the Hoosier Coil Co., South Bend, Ind. This instrument has two vibrators instead of one, but these are so connected that only one operates at a time. Should the operating vibrator for any reason become faulty and stick, the other which ordinarily is dead, immediately comes into action. Then should the first vibrator again become active the now-active one will stop and allow the original pair to again do all the work. This means that there is one vibrator always in readiness, but not working, for an emergency call should the operating points stick. This master vibrator as with others does the work of the four unit coils supplied with the Ford car. The coil shown in Fig. 2, is mounted in a mahogany box with switch attached and the whole outfit sells for \$15.

Metzger-Daniels Magnet Charger

A three-coil electromagnet for recharging magneto magnets is being marketed by the Metzger-Daniels Co., Inc., Portland, Ore., and its main features are that it is operated at 6 volts and saturates an ordinary magnet in a few seconds. The three coils have a total winding of over 8,500 ampere-turns, it is claimed, and in a recent test a magnet was charged in 3 seconds' time so it would lift 85 pounds. The magnet to be charged is placed so that its ends touch the core ends of the coil, the large coils being adjustable for different size magnets. It is illustrated in Fig. 4 and sells for \$20.

Multiple-Cone Clutch

A new type of clutch which has three cones has been announced by the Automatic Gas Motor Co., Indianapolis, Ind., the feature of this clutch being that it gives easy engagement, lubrication is necessary only twice yearly, it is simple and is smaller in size than the average single

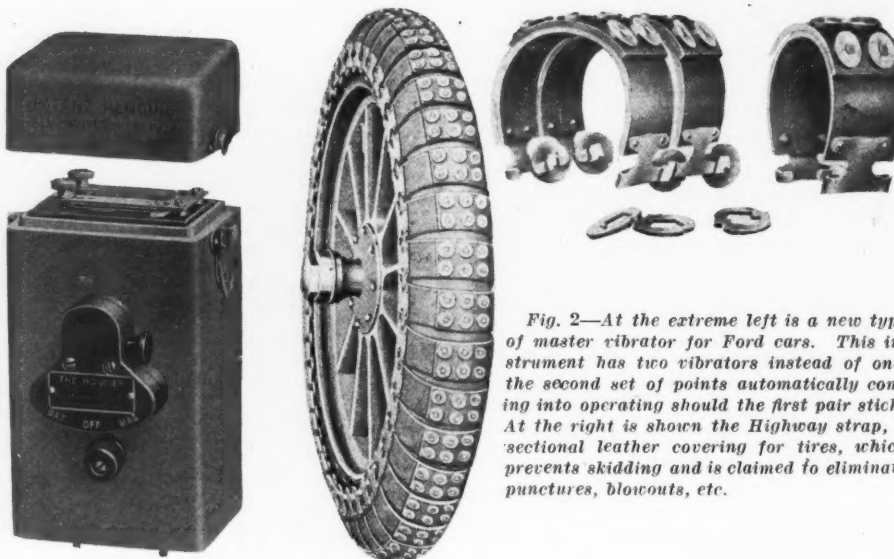


Fig. 2—At the extreme left is a new type of master vibrator for Ford cars. This instrument has two vibrators instead of one, the second set of points automatically coming into operating should the first pair stick. At the right is shown the Highway strap, a sectional leather covering for tires, which prevents skidding and is claimed to eliminate punctures, blowouts, etc.

cone clutch. The three cones A, B and C in Fig. 1 come into engagement one after the other, thus bringing the load on gradually and preventing jerking. When under load it is said to have exceptionally good holding qualities.

Highway Tire Straps

A tire protector, made of sections built of Balata belting and leather covered with steel plates, is one of the latest tire accessories placed upon the market and is the product of the Bukolt Mfg. Co., Stevens Point, Wis. This protector, which is applied to a tire like a tire chain, is claimed to prevent skidding, lessen the chances of a blowout, increase tire mileage and prevent punctures, bruises, etc. The protector is held to the casing by links which are tightened with a key. Each section consists of a band of leather and Balata belting with six plates or washes on

the surface and hooks at the bottom as shown in Fig. 2. The hooks are attached to special links. A space is left between each two sections so as to allow air to reach the tire and also to permit mud, water, etc., to be thrown out. The prices range from \$8.40 for the 28 by 3-inch size to \$20 for the 45 by 5-inch. The former contains 42 sections which sell separately for 20 cents and the latter 39

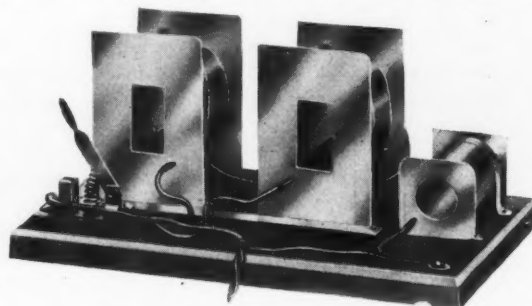


Fig. 4—Metzger-Daniels electro-magnet for recharging magneto magnets. It operates at 6 volts

which sell for 50 cents each. The sections are easily removed and replaced.

Perfect Process Vulcanizer

A fuel-burning vulcanizer of unusual construction is the latest product of the National Cement and Rubber Co., Toledo, O. It is called the Perfect Process and repairs either outer casings or tubes, using a measured amount of gasoline or alcohol as the heat-producing agent. The Perfect Process, shown in Fig. 3, is a small kettle-like vulcanizer. The illustration shows how it is used for tube repairing.

When desired for casing vulcanizing the bottom plate is removed and the hoop reversed. It then is clamped around the casing, fuel is poured through two holes on top and when this has been consumed by

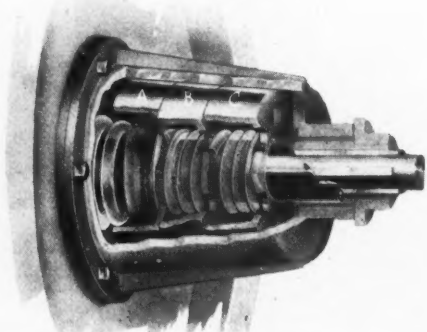


Fig. 1—A new type of clutch called the Multiple-cone from the fact it has three cones, A, B and C in the illustration. These engage one after the other, thus giving smooth starting



Fig. 3—A fuel-burning vulcanizer called the Perfect Process, which repairs either casings or tubes



Fig. 5—A two-part spring called the Anderson which is designed to vary in resiliency with the load carried and take light and heavy shocks equally well

burning, the repair is said to be complete. In order to protect the rubber around the damaged spot the vulcanizer is so constructed that the center only is hot while the balance of the plate is comparatively cool.

Universal Reel Light

A handy combination trouble and dash-lamp called the Universal has been introduced by Cumings Bros., Flint, Mich. The Universal is made in two parts one of which contains a reel for holding the lamp cord and the other the lamp proper, which is attached to the top of the reel container. When installed the reel holder is fastened permanently to the dash of the car, as shown in Fig. 9, and the lamp is fastened to it by a nut N. The base of the lamp forms a ball joint B so that any desired portion of the dash may be illuminated. It may be set in a fixed position by tightening the knurled nut shown. When used as a trouble light it is removed from the reel casings, carried around the car and after the inspection has been made, the lamp cord is wound upon the reel by means of the small handle shown



Fig. 6—A five-passenger Ford sedan body brought out by the Storm Buggy Co.

in the illustration. Operation is by four to six dry cells or a 6-volt storage battery. This lamp which sells for \$4 complete with 12 feet of lamp cord, may be used also as a tonneau lamp.

Ford Sedan Body

One of the latest types of Ford inclosed bodies to come to the market is that manufactured by the Storm Buggy Co., Fostoria, O. It is called a sedan and seats as many as five persons. The inclosed-body idea has been taking a firm hold on Ford owners and that illustrated in Fig. 6 afford a means of obtaining comfortable riding during the winter months and cool rid-

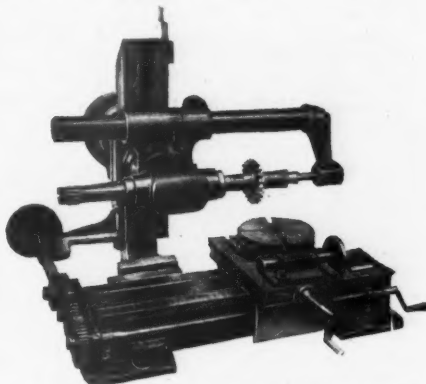


Fig. 7—Combination tool called the Bench Machinist, which may be used as a lathe, milling machine and drill press

ing in the warmer weather it is claimed owing to provision for ventilation.

Anderson Spring

A two-section motor car springs which is designed to carry light and heavy loads and take light and heavy shocks equally well, has been announced by the Anderson Spring Co., Detroit, Minn. The Anderson consists of an ordinary light spring as one portion and a series of leaves clamped at the center and separating toward the end, at the other. The small spring or series of leaves is placed above the larger one as shown in Fig. 5 and shackled near the ends of the main spring. When the weight of the empty car is on the lower section there is no load on the upper leaves. As the car is loaded the upper section comes into operation, as many leaves com-

ing into engagement as the load requires. In other words, each addition to the load brings more of the upper spring into play. It is stated that no shock absorbers are needed with this spring system as the upper spring cares for the recoil.

The Bench Machinist

Garage and repairmen will be interested in a combination tool called the Bench Machinist which acts as a lathe, milling machine and drill press and is being distributed by the Hunt Engineering and Sales Agency, Los Angeles, Cal. The machine shown in Fig. 7 is said to perform such operations as the cutting of Woodruff or straight keyways, square shafts, etc. The spindle is driven through a three-step cone pulley and telescopic shaft with two universals. The spindle is of 1-inch diameter and takes a No. 2 Morse taper on the working end. The face plate is 5 inches in diameter and the drilling capacity is $\frac{1}{2}$ inch. The Bench Machinist will cut from eight to thirty-two standard threads. A power feed screw is actuated by spur change gears which engages either with the end of the spindle when in a horizontal position or a special worm gear attachment driven from the cone pulley.

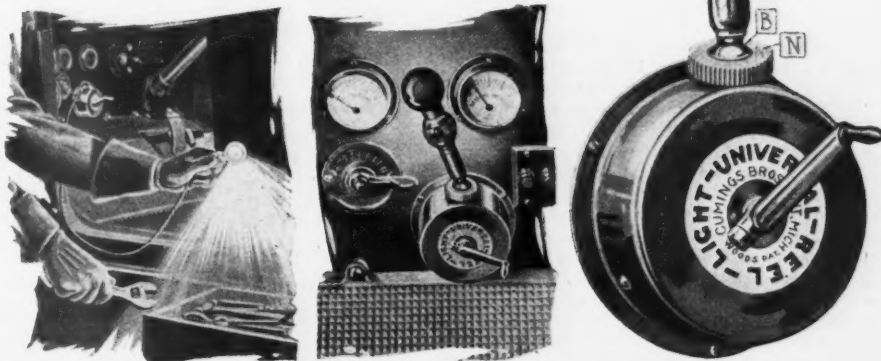
Brazelton Headlights

An odd type of headlight has been introduced by G. T. Brazelton, Birmingham, Ala., which is built into the radiator and has shutters at the sides which permit the light to be thrown to the sides of the road. The shutters are operated from the driver's seat and the light coming through the shutters is thrown above the fenders owing to the high position of the lamps.

Ford Valve Refacer

A tool for refacing the valves of a Ford motor, is being marketed by the Liberty Tire & Supply Co., Chambers St., New York. It consists of a guide for holding the valve and a suitable cutting edge. It sells for \$2.

Fig. 9—Universal Reel light which is a combination trouble light and dash lamp. Note how the ball joint B permits the lamp to be turned at an angle on the dash. The nut N holds it in the set position. The casing holds many turns of lamp cord on a reel





From the Four Winds



CORONA Races Thanksgiving Day—The Corona, Cal., races, which had their inception last year on September 9, will be held this year on Thanksgiving Day. Seventeen thousand dollars will be awarded the winners of the 250- and 300-mile races to be run over the 3-mile circular boulevard course.

Show at Connecticut State Fair—A motor show will be a feature of the Connecticut state fair at Charter Oak park this season. There is to be a big motor car parade during the week. Many of the Hartford dealers have taken space and will display their new cars in the main exhibition hall. The show begins Monday and lasts for a week.

Chauffeurs Would Go to War—At a meeting of the Toronto Chauffeurs' Protection Association, 300 men offered their services to the military authorities. In a letter sent to Major General Lessard from the meeting, it was stated that of the number thirty were ready to leave at once, all men of experience who could handle and do mechanical repairs on every kind of motor vehicle. Several of them have had military training.

Columbus Roads Well Marked—Secretary H. K. Laird, of the Columbus Automobile Club, has completed the work of erecting danger and direction signs on all of the roads within a radius of 35 miles of Columbus. The secretary went over each and every road personally and supervised the erection of the signs. Every dangerous crossing and turn is placarded and all cross roads are provided with direction signs.

Milwaukee's Streets Well Oiled—The department of public works of Milwaukee, Wis., established a new record during the 1914 season by the use of 700,000 gallons of crude oil for street work, an increase of 100,000 gallons over 1913. During the season now closing the department reconstructed and oiled 90 miles of macadam streets. Costs have not yet been tabulated. The city started the present system of using crude oil 3 years ago.

Charities to Profit by Gas War—Five charities of Kansas City, Mo., are to benefit by the latest move in the gasoline price-cutting campaign now raging between the Standard Oil Co. and the independent refineries. The Rockefeller corporation has announced that it will give one-half cent to charity for each gallon of gasoline sold at its filling station in August. The money will amount to between \$2,000 and \$3,000, it is understood, and will be divided among the Associated Charities, the Jewish Educational Institute, Mercy Hospital, the Orphan Boys' Home and Swope Settlement. The last reduction brought gasoline from 10.8 cents to 10.3 cents a gallon. The charity-sharing plan will not be extended to other cities, it was declared. So far, the independent refiners have made no similar move.

Madison Motorists to Form Club—Madison, capital of Wisconsin, is about to have its first motor club. Forty motorists met at luncheon recently and named a committee to look after the details of permanent organization. The agitation for a club is not new and has been going on for more than 5 years, until a few days ago the Madison Board of Commerce, the local civic and commercial association, put its shoulder to the wheel and effected an actual "get-together" meeting. John S. Donald, secretary of state, and in charge of motor registry, acted as chairman of the meeting and will probably be elected first president of the club. There are 2,200 owners in Dane county

and 850 in the city of Madison, giving the new organization a splendid resource for membership. C. E. Buell is chairman of the committee on organization and expects to be ready to incorporate about September 10.

Yosemite Valley Road Opened—The Wawona road to the Yosemite valley and Big Trees is now open to motor cars. Motorists wishing to visit the big trees may get information at the junction of the Big Tree and Madera roads and get permit at the rangers' cabin. The tolls have been reduced by the road companies. The Madera road, thence to big trees and to Wawona is \$1.25 and the same for the return trip. The charge by the government to visit the big trees is \$2.50 for each machine. The rates to Yosemite for each machine from Wawona to Yosemite are \$1.25. This includes the trip to Glacier Point. The government charge is \$5. This includes the trip to Glacier Point and also allows the machine to return to Wawona or come back

via the Coulterville route. The speed limit for cars in the Big Trees is 15 miles per hour but in Yosemite Park it varies.

Benefit Races for Bert Dingley—John S. Wiese of Los Angeles has enlisted the aid of dealers in that city and a large benefit race meet soon will be announced for Bert L. Dingley, injured in the Tacoma meet of July 4. The races will be held at Ascot Park and several drivers have volunteered their services.

Milwaukee Plans for Road Congress—Judging from preparations made by the Citizens Business League of Milwaukee, the first annual Northwestern Road Congress to be held in Milwaukee auditorium from October 28 to 31 will be one of the most important events in American highway annals. Already acceptances have been received from more than 3,700 good roads enthusiasts in Wisconsin, Minnesota, Iowa, Illinois, the Dakotas, Michigan and Nebraska. An extensive exhibit of good roads machinery will be a feature of the convention and a large part of the main arena of the auditorium has been turned over to the league for this purpose.

Lifts Ban on Detroit Track—The contest board of the American Automobile Association has lifted the ban temporarily on the Michigan state fair 1-mile track, and as a result the motor car races, carded for September 6 and 7, will be held as scheduled. The track was put on the A. A. A. black list following the cyclecar and light car races held there July 4 and 5 under the auspices of the Cyclecar Association of America. The suspension was lifted at the request of the drivers, who pointed out that they would be blacklisted by other state fair associations and be subject to legal action if they cancelled their Detroit entries. A star field, including Bob Burman, Louis Disbrow, Eddie Hearne, John Raimy and Fred Horey, will start in this year's races.

Woman Drives from Ocean to Ocean—Completing a cross-country trip absolutely unique in that its woman driver handled the wheel every foot of the way, made all mechanical adjustments and cared for the car, a dusty 1910 Franklin rolled into Los Angeles one day last week. The driver was Mrs. Albert W. Seaman of Brooklyn, N. Y., who, accompanied by her husband, made the long and arduous drive across country, and not only looked after the welfare of her own car, but came to the rescue of several male motorists, who for lack of mechanical skill were stranded far from friendly garages. Though the 4150-mile journey just ended was the longest so far attempted by Mrs. Seaman, she has driven her car through every state east of the Mississippi except Florida.

German Cars at Swedish Fair—At the exposition which opened in Malmö, Sweden, May 15, and which it is reported was closed a week after war between Germany and Russia was declared, four countries exhibited their products in the 117 buildings on the exposition grounds. There were 1,225 Swedish exhibitors, 668 German, 241 Danish and 151 Russian. The German motor car industry took up one-fifth of the total number of German exhibitors as every car and parts and accessory manufacturer of Germany is reported to have been represented. In fact, it is stated in German publications that never before in the history of the German motor industry was that country so thoroughly represented. More than 150 complete German cars were on display.

Coming Motor Events

SHOWS AND CONVENTIONS

September 9-11—Convention of National Paving Brick Manufacturers' Association, Buffalo, N. Y.
 September 7—Indianapolis show.
 October 5-10—Fall show, St. Louis.
 October 7-10—Convention of the Motor Truck Club of America, Detroit, Mich.
 October 3-10—Show, Cincinnati, O.
 October 7-17—Electric vehicle show, Grand Central Palace, New York.
 October 17-24—Show, Pittsburgh, Pa.
 October 19-21—Convention of Electric Vehicle Association of America, Philadelphia.
 November 9-14—American Road Congress, Atlanta, Ga.
 January 2-9—New York show.
 January 9-16—Philadelphia show.
 January 23-30—Chicago show.
 January 30-February 6—Minneapolis show.

CONTESTS

*September 2-4—Economy run, Wisconsin.
 *September 4—Track meet, Des Moines, Ia.
 *September 5—Track meet, Coshocton, O.
 *September 5—Track meet, Milwaukee, Wis.
 *September 5-7—Track meet, Brighton Beach, N. Y.
 *September 6-7—Track meet, Detroit, Mich.
 *September 7—Track meet for amateur drivers, Denver, Colo.
 *September 12—Track meet, Hamline, Minn.
 *September 14—Track meet, Milwaukee, Wis.
 *September 15-16—Track meet, Norfolk, Neb.
 *September 15-16—Track meet, Norfolk, Neb.
 *September 18-19—Track meet, Hutchinson, Kans.
 *September 18-26—Track meet, Springfield, Ill.
 *September 26—Track meet, Memphis, Tenn.
 *September 26—Track meet, Kalamazoo, Mich.
 *September 27—Track meet, Pleasanton, Cal.
 *October 2—Track meet, Trenton, N. J.
 *October 2-3—Track meet, Oklahoma City, Okla.
 *October 2-3—Track meet, Trenton, N. J.
 *October 3—Track meet, Fresno, Cal.
 *November 8-11—Track meet, Shreveport, La.
 *November 26—Corona road races, Corona, Cal.
 *November—El Paso-Phoenix road race.
 *November—Los Angeles-Phoenix road race.
 *November—Albuquerque-Phoenix road race.
 *November—Track meet, Phoenix, Ariz.

*Sanctioned by A. A. A.



Among the Makers and Dealers



TO Build Electric Trucks—In addition to a line of passenger cars, the Beardsley Electric Co. will build trucks of ½-ton and 1-ton capacity.

Canadian Maker Busy Despite War—The results of the European war are not feared by the Russell Motor Car Co. of Toronto, Canada, which announces that it has no intention of laying off men or closing down the plant. The company has enough work on hand to keep it busy for several months and orders are coming in as fast as they were before the first clash across the Atlantic.

To Make Tires for Fords Only—A new tire-making concern is being organized in Toledo, O. and application for a charter will soon be made to the secretary of state. The concern will take for its name the Ford Tire Co. and will manufacture tires and tubes exclusively for Ford cars. The company will be financed on the co-operative basis.

Building U. S. Trucks in Kentucky—For the purpose of taking over the United States Motor Truck Co. of Cincinnati, O., a new concern of that name was recently incorporated under the laws of Kentucky with an authorized capitalization of \$25,000. The new company has located its plant in Covington, Ky., where it is turning out United States trucks in 2-, 3- and 4-ton sizes. New 1- and ½-ton models will be announced shortly.

New Plant for M. & M. Co.—To take care of its rapidly increasing business the M. & M. Co. of Cleveland, O., dealer in motor car supplies, has acquired additional property and will erect a new plant. The M. & M. Co., of which J. C. McLean is general manager, recently took over the stock and good will of the Kinsey Mfg. Co. of Toledo, O., maker of radiators and parts. This stock will be shipped to Cleveland to be disposed of.

Hupp Enlarging Office Building—Work has been started on a large addition to the general office building of the Hupp Motor Car Co. When completed, the offices will have about double the floor space which they now occupy. One of the features will be a new and much larger dining room where the noon luncheons will be served. These have been found by the officials of the company to be of the greatest aid in effecting close co-operation among the men.

Joins Briggs-Detroit Co.—The Briggs-Detroit Co., manufacturer of the Detroit cars, announces the appointment of F. B. Packwood to the position of assistant sales manager, with headquarters in Omaha, Neb. Mr. Packwood was formerly with the sales organization of the Everitt Motor Car Co., and later distributor for the Krit and E-M-F motor car companies. J. E. Morgan, formerly with the Everitt company, has become assistant to General Sales Manager Wallace C. Hood.

Northwestern Dealers to Meet—There probably will be several hundred retail dealers and garage owners in Minneapolis September 10 and 11 when the first convention of the Retail Automobile Dealers' Association of the Northwest will take place. The 2-day affair will be a composite of pleasure and business, it being the object of the convention to be a go-between for the retail and wholesale trade. The association was organized for the purpose of standardizing the retail motor car industry and receive the co-operation from the dealers, also the co-operation of the retail dealers and garage men, on the one hand, and the wholesale accessory and supply houses, distributors and manufacturers, on the other hand. The officers

of the association are: C. W. Jewett, Bemidji, Minn., president; G. A. Lewis, Mankato, vice-president; P. C. Frazee, Pelican Rapids, secretary-treasurer.

S. A. E. European Trip Postponed—The Society of Automobile Engineers has postponed its second European trip indefinitely. The sailing date had been set around October 10 and the first stop was to have been Paris, but the present war conditions has brought forth the postponement. The trip, as outlined, extended through France, Italy, Switzerland, Germany and England.

Changes in Federal Truck Forces—Important changes have been made in the organization of the Federal Motor Truck Co. H. T. Sigwalt, formerly with the Fort Wayne Corrugated Paper Co., Fort Wayne, Ind., has joined the truck manufacturers as advertising manager. R. G. Hargreaves, who formerly was with the Cadillac Motor Car Co., Detroit, has been appointed transportation engineer. In the sales department the following appointments were made: C. T. Cary, formerly with the Peerless Motor Car Co.,

Cleveland, O., as manager of its truck department, is now eastern district sales manager E. W. Hurd, formerly with the J. D. Whitmann Co., is district manager for the territory comprising Michigan, Ohio and Pennsylvania. L. L. Barnes, formerly with the Chalmers Motor Co., Detroit, is now southeastern district sales manager. Charles Case, who was with the Oliver Motor Truck Co., Detroit, has become southwestern district sales manager.

To Make Cyclecars in Seattle—The Elbert Motor Car Co. of Seattle has filed articles of incorporation and will shortly commence building cyclecars in Seattle. The car has been named the Elbert and will have a four-cylinder water-cooled motor of 18 horsepower and will be of the shaft-drive type. It will have a wheel base of 102 inches and weigh 500 pounds. Comprising the company are L. H. Beamish of Vancouver, B. C., N. F. Wilson of San Francisco and L. W. O'Connell of Chicago. The designer is F. W. Topkin, formerly mechanical engineer for the Chicago Pneumatic Tube Co.

Recent Incorporations

Albany, N. Y.—Lubricating Accessories Co., capital stock, \$25,000; incorporators, J. Swanson, R. W. Haubner, P. A. Ott.

Albany, N. Y.—Aetna Trucking Co., capital stock, \$5,000; to manufacture motors; incorporators, A. L. Siegel, C. W. Bliss, E. M. Kolstad.

Boston, Mass.—Automobile Tourists' Association, capital stock, \$15,000; incorporators, C. H. Cochran, George H. Cox, Jr., W. J. E. Sander.

Boston, Mass.—Stutz Motor Service & Auto Repair Co., capital stock, \$2,000; incorporators, H. L. Strand, Z. R. Taylor, E. Longchamps.

Boston, Mass.—International Sales Organization, capital stock, \$50,000; to deal in motor cars and supplies; incorporators, L. Taylor, R. Taylor, E. W. Brown.

Bloomfield, N. J.—Sadler Garage & Sales Co., capital stock, \$3,000; incorporators, F. Sadler, E. Sadler, W. P. Sadler.

Cape May, N. J.—Dix Auto Co., capital stock, \$10,000; incorporators, J. Morgan, L. H. Dix, H. L. Yerby.

Chicago—Eagle Cycle Car Co., capital stock, \$250,000; to manufacture motor cars; incorporators, I. Parker, U. B. Curtis, E. G. Lancaster.

Chicago—Dashiell Motor Co., capital stock, \$25,000; to manufacture motor vehicles; incorporators, C. R. Dashiell, E. C. Watten, C. H. Pegler.

Chicago—Service Motor Supply Co., capital stock, \$5,000; general motor car business; incorporators, G. C. Aucutt, S. H. Silverman, H. P. Walbaum.

Chicago—McMorn Auto Parts Co., capital stock, \$20,000; to manufacture motor car parts; incorporators, W. R. Fetzer, E. A. Biggs, E. S. Carr.

Cincinnati, O.—Cincinnati Automobile Dealers' Co., capital stock, \$2,500; to give exhibitions; incorporators, H. O. Brunton, E. A. Kruse, F. N. Miller, W. G. Welbon, A. C. Fisher.

Cleveland, O.—Limou Curtain & Equipment Co., capital stock, \$1,000; to deal in curtains and supplies; incorporators, A. P. Fischley, B. B. Fischley, C. Albracht, J. L. Albracht, C. M. White.

Cleveland, O.—Ot-to No Air Tire Co., capital stock, \$100,000; to manufacture tires; incorporators, F. V. Roessel, W. B. Ott, G. M. Ott, G. N. Gilmore, C. H. Franks.

Columbus, O.—Wagner Automobile Garage, capital stock, \$10,000; incorporators, C. W. Wagner, F. M. Lose, G. A. Siebanoller, G. A. Wendling, C. M. James.

Columbia, S. C.—Cheraw Motor Co., capital stock, \$5,000; to deal in motor cars; incorporators, H. B. May, R. B. May, P. A. Murray, Jr.

Covington, Ky.—Kenton Motors Co., capital stock, \$10,000; incorporators, E. J. Rouse, L. E. Booth, M. R. Ethelredge.

Detroit, Mich.—McKenney-Devlin Co., capital stock, \$10,000; to manufacture and deal in motor cars; incorporators, G. A. Devlin, L. A. Devlin, F. B. McKenney.

Detroit, Mich.—Stoepel Co., capital stock, \$1,000; to deal in motor cars and supplies; in-

corporators, H. R. Stoepel, D. M. Whitney, N. T. Viger.

El Paso, Tex.—Oakland Auto Sales Co., capital stock, \$15,000; incorporators, R. W. Prosser, L. Rust, A. H. Elmore.

Elvira, O.—L. T. S. Rubber Co., capital stock, \$100,000; to manufacture rubber goods; incorporators, J. G. Telford, A. G. Smith, C. H. Ingwer, W. C. Smith, C. H. Lewis.

Evansville, Ind.—Bennighof-Nolan Co., capital stock, \$10,000; to manufacture motor cars; incorporators, B. P. Bennighof, J. J. Nolan, V. F. Nolan.

Flint, Mich.—Flint Metal Specialty Co., to manufacture metal specialties; incorporators, R. S. Gott, A. S. Allen, E. J. Vining.

Fr. Smith, Ark.—Auto Sales Co., capital stock, \$25,000; to deal in motor cars.

Harrisburg, Pa.—Cummins Motor Car Co., capital stock, \$25,000; to deal in motor cars; incorporators, O. O. Cummins, T. Y. Gregg, H. R. Walker.

Hartford, Conn.—Colonial Auto Co., capital stock, \$20,000; to deal in motor cars; incorporators, W. M. Turnbull, H. O. Turnbull, D. A. Turnbull.

Haverhill, Mass.—Renton Motor Car Co., capital stock, \$2,000; incorporators, L. T. Wolff, R. W. Renton, F. W. Johnson.

Indianapolis, Ind.—Garage Owners' Association of Indiana, incorporators, W. N. Mitchell, A. L. Mitchell, G. Pfeiffer.

Jamestown, N. Y.—Gabrielson Car Parts Mfg. Co., capital stock, \$35,000; incorporators, J. Gabrielson, G. A. Lawson, O. A. Lenna.

Long Beach, Cal.—California Garage & Supply Co., capital stock, \$50,000; incorporators, L. A. Hancock, W. J. Reid, E. S. Hancock, R. H. Brown.

Long Island, N. Y.—Astoria Auto Trucking Corp., capital stock, \$3,000; incorporators, P. Sillman, C. Straub, E. W. Ryder.

Malden, Mass.—Carpenter Spring Tire Co., capital stock, \$50,000; incorporators, I. J. Carpenter, G. F. Cantelle, W. E. Heath.

Massillon, O.—Wagner Automobile Garage Co., capital stock, \$10,000; general garage business; incorporators, C. W. Wagner, F. M. Lose, G. A. Siebanoller, C. A. Wendling, C. M. James.

New York—Saxon Motor Co., capital stock, \$1,000; incorporators, H. W. Ward, L. R. Scafe, L. Moore.

New York—Accident-Proof Tire Co., capital stock, \$250,000; to manufacture tires; incorporators, K. F. Albertson, J. O. Hodge, C. W. Stuart.

New York—Arthur J. Myers, capital stock, \$3,000; motor car business; incorporators, H. M. Greenbaum, Wm. P. Riley, A. R. Rubin.

New York—Taft-Rich Auto Co., capital stock, \$10,000; incorporators, R. R. Richtenstein, R. R. Richtenstein.

Nashville, Tenn.—Kuhlman Motor Sales Co.; incorporators, W. D. Kuhlman, J. B. Caldwell, J. W. Low, D. M. Chambliss, N. B. Kuhlman.

Norwalk, Conn.—Norwalk Supply shop, capital stock, \$5,000; to deal in motor cars; incorporators, J. A. Mills, S. L. Mills, M. A. Gregory.

Philadelphia, Pa.—Lee Tire Sales Co., capital stock, \$5,000; incorporator, D. W. Pinney.

Providence, R. I.—Nash Motor Road Corp., capital stock, \$30,000; road building business; incorporators, J. F. O'Connell, J. J. Cunningham, J. C. Mahoney.

Rochester, N. Y.—J. Lawrence Hill Co., capital stock, \$10,000; motor car business; incorporators, J. L. Hill, J. Jaffray, J. C. Harris.

Rochester, N. Y.—Pinner Electric Motor Mfg. Co., capital stock, \$10,000; to repair and deal in electric motors; incorporators, W. Weyrauch, R. C. Cash, H. R. Howard.



Brief Business Announcements



PITTSBURG, O.—The Tire Sales Co. has started in business at 917 Liberty avenue.

Toledo, O.—Papers have been filed increasing the capital of the Blevins Auto Sales Co., from \$10,000 to \$13,000.

Des Moines, Ia.—L. C. Pickering has been appointed manager for the recently organized Grant Distributing Co., which has opened for business at 514 Grant avenue.

Cleveland, O.—Raymond T. Middleton, formerly western representative of the Rhineland Machine Works, of New York, is now with the Electric Welding Products Co., of this city, in a similar capacity.

Seattle, Wash.—E. T. Clarke, formerly representing the Chandler car in Seattle, has taken charge of the Puget Sound sales and distributing agency for Kelly-Springfield tires at 515 East Pike street, Seattle.

Seattle, Wash.—The Knight Tire and Rubber Co. has recently opened a northwest supply depot in Seattle at 1710 Broadway. This depot will supply the tire trade in Washington, Oregon, Idaho and British Columbia. E. J. Moskowicz is in charge.

Chicago—The George W. Houk Co. of Buffalo, selling Houk detachable wire wheels, announces the opening of a branch in Chicago at 2339 South Michigan avenue. D. J. Canary is in charge. Wholesale and retail business in Chicago and surrounding territory will be handled from this store.

Pittsburgh, Pa.—The Olds Motor Works, Lansing, Mich., has given up its local branch and the former manager and assistant manager, George S. Morrow and B. W. Lemmon, have organized the Oldsmobile Co. of Pittsburgh, incorporated under the laws of Penn-

sylvania, which is now the local distributor for the Oldsmobile cars.

San Francisco, Cal.—The Rim-Grip Sub-Casing Co., agent for the Fisher sub-casings, has opened distributing headquarters at 569 Golden Gate avenue.

Malvern, Ark.—J. W. Alexander has withdrawn from the Malvern Livery and Auto Co., and has secured the agency for the Maxwell. He will open a garage within the next few weeks.

Buffalo, N. Y.—The Kuhn-Adler Co., recently incorporated with capital of \$5,000, will begin business with head offices in Buffalo. The directors are Edward G. Kuhn, Elmer E. Adler and Edward E. Denniston, all of Buffalo. The company will manufacture motor car appliances and conduct a garage.

Minneapolis, Minn.—Application for adjudication in bankruptcy has been filed in the federal court by the Motor Truck Sales Co. Original petition for involuntary proceedings was filed by three creditors, including the Kelly-Springfield Motor Truck Co., and the Manhattan Oil and Linseed Co.

San Diego, Cal.—The Savage Tire Co. has made the following appointments of dealers in the state of Wisconsin: Milwaukee, Becker & McLeod; Medford, C. F. Ungredt; Rewey, Rewey Carriage and Auto Co.; Berlin, John Thompson; Baraboo, E. T. Gollman; Ellsworth, Ellsworth Auto and Repair Co.; Chetek, Edward Keopp; Wilton, E. F. Boetzel; Whitewater, Gustaveson & Son; Prairie du Chien, Harris Auto Co.; Brownsville, George A. Sprengelberg; Gresham, Fred A. Ollman; Hub City, H. W. Leatherberry;

Fremont, E. J. Sades; Dodge, Frank P. Bam-benek.

Salt Lake City, Utah—The General Garage has opened for business on First South street, occupying the premises of the old East Side Barn, which has accommodations for 200 cars.

Keokuk, Ia.—The general service station and repair shop of the Gate City Motor Car Co., 509-517 Johnson street, was totally destroyed by fire recently. This company will re-establish itself in more commodious quarters.

Wheeling, W. Va.—The Auto Sales Co. and the Capital Car Co., which have been doing business under the former's name, have separated, the former company remaining at Sixteenth and Market street, to handle the Overland, while the Capital company is seeking new quarters.

Columbus, O.—The Capital Motor Car Co. has been organized by Ira P. Madden and Ralph Atkinson, who are respectively president and general manager of the company, which has located at 168 North Fourth street, and which has the agency for the Reo cars for twelve counties, including Franklin county.

Indianapolis, Ind.—Judge Joseph Collier, of the superior court, Indianapolis, has appointed C. R. Cameron, an attorney, receiver for the Claypool Garage Co. on a complaint filed by Albert C. Ross, a creditor of the company. Ross alleges that Samuel D. Bromley and William H. Wilson, who operated the business, have left the state. The company was organized and incorporated recently and announced it would hold monthly auction sales of used cars.

Recent Agencies Apopinted by Motor Car Manufacturers

PASSENGER CARS

| Town | Agent | Make | Town | Agent | Make |
|-----------------------|----------------------------|-----------|------------------------|-------------------------------|------------|
| Albany, Ill. | J. W. Dineen | Saxon | Harrisonburg, Va. | Kavanaugh Garage | Haynes |
| Albany, N. Y. | Stutz Automobile Co. | Hupmobile | Huntington, W. Va. | Walter L. Robinson | Haynes |
| Aurora, Ill. | Sprinkel & Bromley | Wahl | Johnson City, Ill. | Colp Mercantile Co. | Saxon |
| Archbold, O. | Haynes Auto Sales Co. | Haynes | Kinston, N. C. | Kinston Garage | Saxon |
| Angola, Ind. | Hendry & Elston | Haynes | Lancaster, O. | Clyde Chidester | Reo |
| Bellefontaine, O. | Hornsberger Garage | Saxon | Ludington, Mich. | Donald McVichie | Oldsmobile |
| Bridger, Mont. | Dowdle & Hough | Haynes | Lowell, Ind. | Lowell Garage Co. | Wahl |
| Benton, Harbor, Mich. | Collis & Slanker | Wahl | Monterey, Va. | Kyle Garage Co. | Haynes |
| Convo, O. | W. G. Campbell | Saxon | Minneapolis, Minn. | John E. Fawkes | Oldsmobile |
| Cleveland, O. | Richardson Motor Car Co. | Hupmobile | Marquette, Mich. | Cleveland Auto Co. | Buick |
| Columbia, S. C. | Haynes Motor Car Co. | Haynes | Middletown, N. Y. | Milton E. Slawson | Reo |
| Columbus, O. | Kaiser Motor Car Co. | Hupmobile | Meridian, Miss. | John H. Semmes Motor Co. | Haynes |
| Columbus, O. | P. H. Rogers Motor Car Co. | Haynes | North Yakima, Wash. | Central Auto Supply Co. | Haynes |
| Columbus, O. | Miller-Main Garage | Vulcan | Olney, Ill. | Auto Supply Co. | Saxon |
| Columbus, O. | Brasher Motor Car Co. | Cole | Peoria, Ill. | Automobile Exchange of Peoria | Haynes |
| Columbus, O. | Brasher Motor Car Co. | White | Pontiac, Ill. | J. P. Cook & Co. | Haynes |
| Columbus, O. | Brasher Motor Car Co. | Waverley | Princeton, Ill. | Alpaugh Brothers | Haynes |
| Circleville, O. | Clifton Brothers | Reo | Port Arthur, Ont. | Central Garage | Saxon |
| Clinton, Ia. | Saxon Motor Co. | Saxon | Princeton, W. Va. | Princeton Motor Garage Co. | Haynes |
| Clifton Forge, Va. | W. G. Mathews | Haynes | Prairie du Chien, Wis. | Harris Auto Co. | Saxon |
| Charleston, W. Va. | Wm. Hoferer & Son | Haynes | Portland, Ind. | Fred Foltz | Haynes |
| Corydon, Ia. | Wayne County Auto Co. | Haynes | Reardan, Wash. | John Raymer | Hudson |
| Detroit, Mich. | McKenney-Devlin Co. | Detroit | Ramsey, Ill. | L. F. Strobel | Haynes |
| Denver, Colo. | Tom Botterill | Dodge | Redkey, Ind. | Redkey Garage | Saxon |
| Denver, Colo. | Wm. Thorney Auto Co. | Apperson | Seymour, Wis. | Otto Motor Co. | Saxon |
| Dayton, Wash. | W. K. Bloome | Haynes | Schuyler, Neb. | Douglas Grotluschen | Haynes |
| Easton, Pa. | Keffer & Steele Motor Co. | Haynes | St. Louis, Mo. | Cherokee Automobile Co. | Davis |
| Fremont, Neb. | Leslie L. Whitcomb | Haynes | Saginaw, Mich. | J. P. Beck | Krit |
| Fredericksburg, Va. | W. A. Richards, Jr. | Saxon | Swedesboro, N. J. | H. F. Hunter | Haynes |

COMMERCIAL CARS

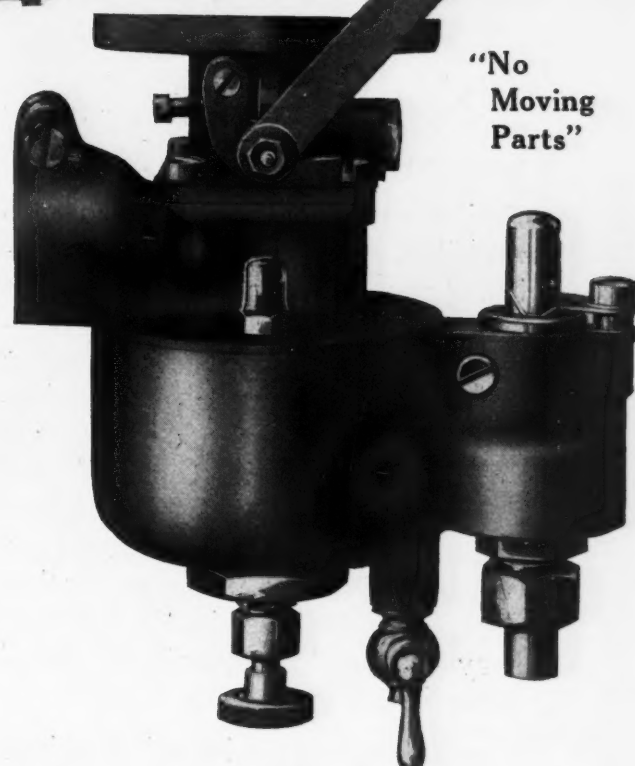
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|-----------------|---------------------|-----------|-------------------|---------------------|-----------------|
| St. Louis, Mo. | Wagenhals Motor Co. | Wagenhals | Belvidere, N. J. | Harry Searles | Koehler |
| Hartford, Conn. | Keeney Garage Co. | Selden | San Antonio, Tex. | C. H. Dean | Koehler |
| Hartford, Conn. | Keeney Garage Co. | Vim | Columbus, O. | L. H. Noltemeyer | Gramm-Bernstein |
| Austin, Tex. | S. E. Kinney | Koehler | Philadelphia, Pa. | D. Walter Harper | Flint |
| Dallas, Tex. | W. T. Keaton | Koehler | St. Louis, Mo. | Wagenhals Motor Co. | Wagenhals |

HOLLEY

CARBURETOR



Gauges are used in the manufacture of the Holley Carburetor, which limit variation in the size of the important parts to the thousandth of an inch.



"No
Moving
Parts"

HOLLEY BROTHERS COMPANY

DETROIT MICH.

Foreign Branch: Holley Brothers Co., Coventry, Eng.

Holley Carburetors are carried in stock by
Reo Accessories Co., 1220 Michigan Ave., Chicago, Ill.
Omaha Rubber Company.....Omaha, Neb.
H. F. Brownell Company.....Sioux Falls, S. D.

Hughson & Merton, 530 Golden Gate Ave., San Francisco, Cal., with branches at

Los Angeles, Cal.....1229 So. Olive St.
Portland, Ore.....329 Ankeny St.
Seattle, Wash.....924 East Pike St.

*Wherever aeroplanes soar—
 Wherever motor boats ply—
 Wherever submarines ride be-
 neath the sea—
 Wherever motor cars tour—
 Wherever motorcycles flash by—
 Wherever farm engines labor—
 Wherever tractors plow—
 Wherever mine engines pump
 and strain—*

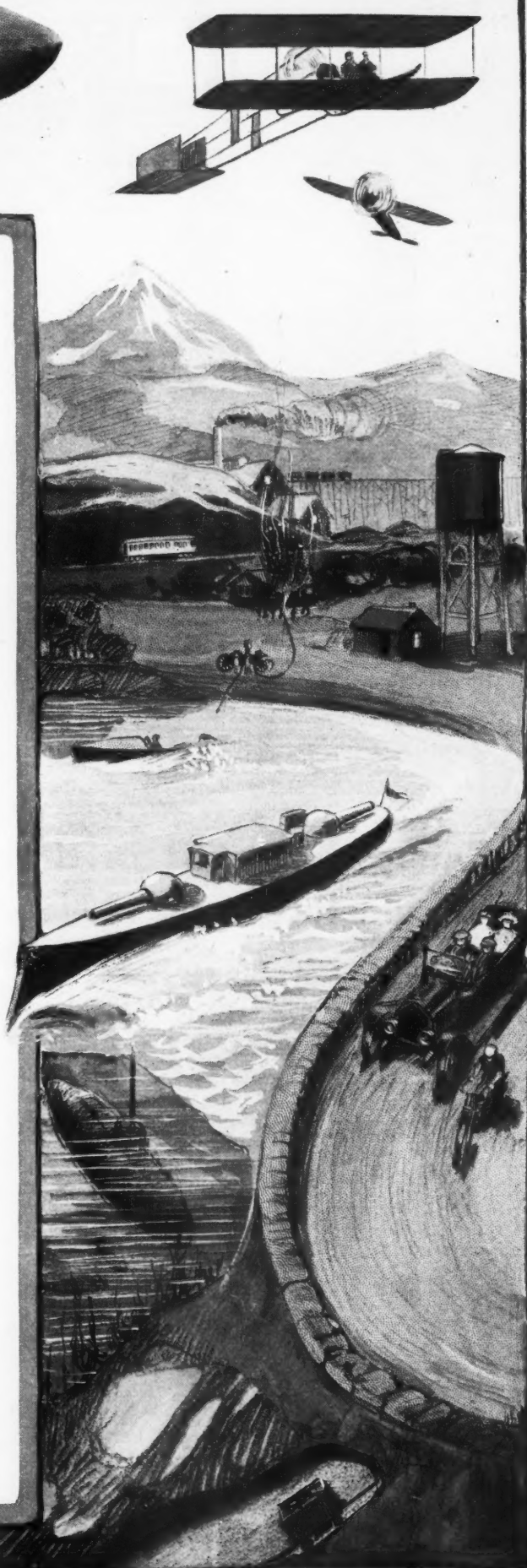
Schebler Carburetors *are found in* **General Service**

Schebler Carburetors hold records in practically every field of motor service.

Referring specifically to automobiles, it is the Schebler Carburetor which holds the world's record for power, economy, flexibility and endurance. The most perfect performance of a carburetor officially recorded in gas engine history is that of the Schebler Model R, which, **without change in adjustment**, completed the 337-hour Moline Knight motor test in the laboratory of the Automobile Club of America.

Bear this record in mind when buying a new car—or when getting a new carburetor for your old car.

WHEELER & SCHEBLER
 Indianapolis, Indiana





YOU may have been offered a signal "just-like," "just-as-good-as," "same-thing-as" the Klaxon—

But you never heard anyone—motorist, car agent or supply dealer—claim that a signal was BETTER than the Klaxon.

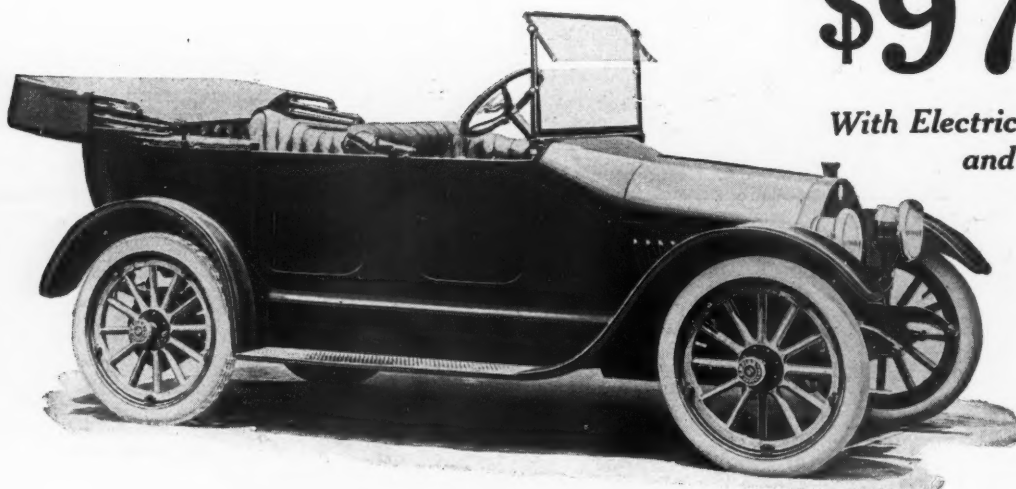
Just what does this fact mean to you?

EMPIRE

"The Little Aristocrat"

\$975

*With Electric Starting
and Lighting*



An Exceptional Guarantee Backs Up Empire Quality

Every part of every EMPIRE car is guaranteed for one year.

Consider this feature as an indication of our belief in EMPIRE sturdiness and reliability. The usual manufacturers' warranty reads "For Ninety Days" The EMPIRE guarantee is "For One Year"—and the binding clause is a part of every EMPIRE sales contract. The fact that the EMPIRE is guaranteed for four times as long a period as ordinary practice demands, gives the best evidence of the EMPIRE Company's faith in its product, an indication of faith due the dealer, whose future depends on the car he sells.

Not only the car, but also the entire Remy electrical equipment with the Willard battery, carries this year's guarantee.

The EMPIRE line for 1915 is more attractive than ever before. Three body types give a selection unusual in cars of so low a price. Each body is mounted on the EMPIRE chassis—a clean cut, sturdy car foundation, designed so correctly, so powerfully, that in three years, with the exception of refinements, we have not found it necessary or even deemed it advisable to make a change in any basic principle of construction.

Model 31-40 is a streamline, touring car of exceptional roominess, that with electric lighting and starting is priced at \$975.00. No more up-to-date car is offered at any price—no car can surpass it in beauty of lines.

Model 31 is the standard EMPIRE five passenger type—a big, roomy car that at \$850.00 offers the greatest value of the season, in a completely equipped non-electric car.

No two passenger car on the market excels the EMPIRE roadster in attractiveness—the reliability of its chassis has been proven. With standard equipment the price is \$875.00; electrically started and lighted \$975.00.

EMPIRE cars for 1915 at these popular prices meet the demand for all that is best in motor cars. There will be a big market for them in your territory. Our sales contract is co-operative. It gives the dealer opportunity to make real money on sales. Your territory may still be open. Write for our proposition and literature today.

Empire Automobile Company

451 Capitol Avenue,

Indianapolis, U. S. A.



Competitors Say They Will Get Our Goat

And they have tried. But when they saw the fence that had to be torn down and the hill they had to climb, the undertaking appeared too strenuous to be undertaken.



Storage Batteries

in the esteem of manufacturer and user alike, occupy a position that's impregnable.

Behind a barrier built of something more tangible than promises and good intentions, the **LBA** is safely ensconced on the pinnacle of Success, a position attained through years of satisfactory service.

Willard Storage Battery Company Cleveland, Ohio

New York Branch: 228-230 W. 58th St.

Chicago Branch: 2241 Michigan Ave.

Detroit Branch: 736-740 Woodward Ave.

San Francisco Branch: 821 Monadnock Bldg.

Indianapolis Branch: 318 North Illinois Avenue

Service Stations in All Principal Cities in the United States, Canada and Mexico

(114)

The Denby Truck Sells on FACTS

This better way is actually used by the Denby Company. No more guessing or vague promises in order to get a prospect's order, but real, concrete facts about haulage work in his line of trade, in his size of business, and under his traffic conditions.

The Denby dealer, backed by factory transportation experts, has a different and vastly more effective line of approach to his prospects than has ever been used before. He knows what horses can do in different kinds of work, and what Denby trucks can do in replacing those horses. He has comparative figures of investment, upkeep cost, etc., which enable him to talk convincingly with his prospect about things which the average dealer never dares mention for fear of being caught "without the goods."

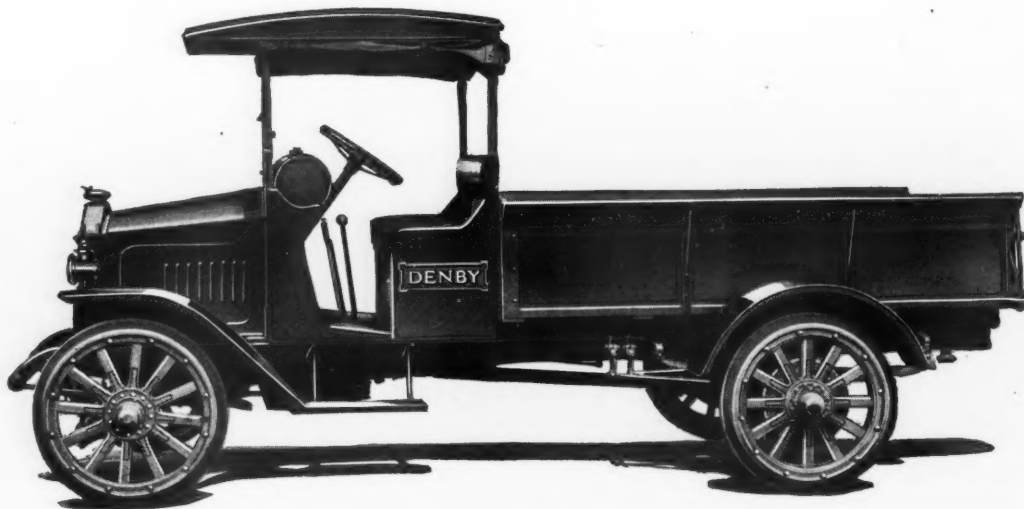
Imagine the feelings of the merchant who finds a Denby dealer actually delving into his delivery system for facts, re-routing his vehicles for greater efficiency, advising with him as to the loading, garaging, etc. There's no recommendation too good for that dealer, his truck and his selling methods.

A Big Power Behind the Dealer

Denby dealers will have factory co-operation never before equalled. An expert engineering and sales force is hard after facts and figures that will not only SELL trucks, but will make them successful in operation. A new method of finding prospects is being employed in every dealer's territory and thousands of business houses will be sent convincing literature to pave the way for the Denby dealer.

Have you asked about your territory yet? If you are the Denby kind of dealer, you should write at once for facts about our dealer proposition.

DENBY MOTOR TRUCK CO., 20 Dubois St., Detroit, Mich.



One of the Very Few Real Truck Opportunities for the Dealer

The names of the men back of the Denby truck are in themselves a guaranty of success.

For men of big calibre and long, successful experience only start on the right basis and with an extra-good proposition. Figure out for yourself the wonderful opportunity there is in working with the newest and best-selling truck in a remarkably lucrative field.

The Denby truck is BUILT right. Every part has been the subject of long experiment and test. The internal-gear drive makes it the smoothest, easiest-running, and most economical truck on the market today.

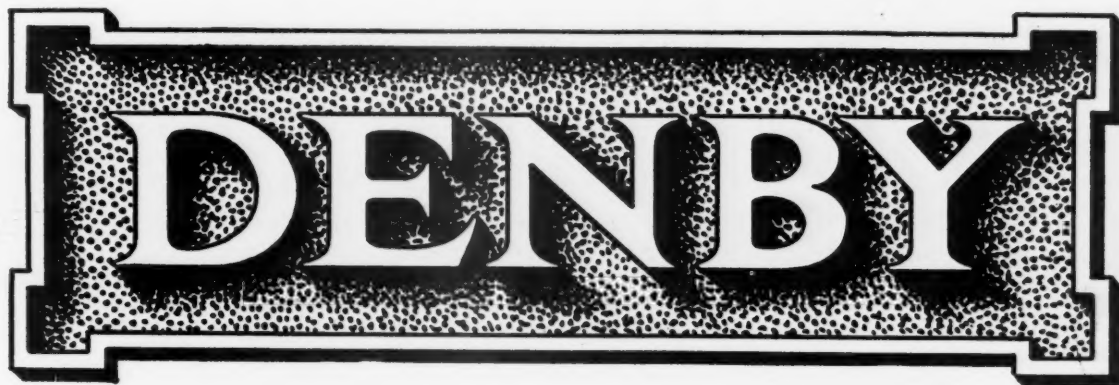
Denby engineers, in developing a perfect internal-gear drive, have placed the Denby truck at least a year in advance. Denby dealers will have today a truck that others cannot have for another season.

And Denby dealers will have an advertising and sales co-operation hitherto undreamed-of in the industry. Where others attempt to sell on generalities, the Denby dealer will use concrete facts regarding the prospect's own business.

Thousands of business men have been waiting for just such a truck and just such sales service.

Write us about your territory.

DENBY MOTOR TRUCK CO., 20 Dubois St., Detroit, Mich.



Within 90 Days Jeffery Four

War is raising prices on imported automobiles. We are also confronted by a heavy demand for the require the high speed European type of motor.

ANNOUNCEMENT has already gone to our dealers that within ninety days the price of the Jeffery Four will be increased. The war has done it. First it raised the cost of the imported materials which are freely used in the Jeffery Four, and now it brings us a flood of orders from markets cut off from European cars, which still insist upon the European type of high speed motor and European attention to detail.

We are going to hold off the actual date of change in price as long as possible, but give this warning to prevent disappointments. The quality of the Jeffery Four will never be compromised; the car will continue as the perfect American type of car which, with small, high-speed motor, dominates the markets of the world.

The success of the Jeffery Four is known to the trade. That it is appreciated as well by people who own and drive this car is indicated by the following brief testimonials reprinted from letters received from owners everywhere.

THE JEFFERY FOUR, the car which introduced the European high-speed, high efficiency motor into America, \$1450.

THE JEFFERY CHESTERFIELD SIX, \$1650.

THE JEFFERY "BIG SIX," \$2400.

Jeffery Motor Trucks—three-quarter ton—one and one-half ton—Jeffery Quad



The Price of the Will Be Advanced

material, much of which is used in the Jeffery Four.
Jeffery Four from many foreign markets which
that Jeffery has made famous in America.

What They Say About the "Four"

FULLY SATISFACTORY ON ROUGH ROADS.

"I ordered my Jeffery Six without even seeing a photograph. It runs like a dream and that is saying a great deal because the roads here are awful."

H. T. GREER, Smithfield, Va.

WHAT AN ARMY MAN SAYS.

"I have a number of cars and none have approached the Jeffery Six in all-around satisfaction and feeling of pleasure in ownership."

WALTER S. VOLKMAR,
First Lieut., United States Army.

A GOOD CAR.

"The Jeffery Four has the sweetest running motor the writer ever rode behind. It is a wonderful hill climber and some good car."

L. G. MARTIN, Pittsburgh, Pa.

A HIGH GRADE CAR.

"Our Four made eighty miles in two hours and a half and it's a high grade car from stem to stern."

C. O. UPDIKE, Louisville, Ky.

NO FAULT WITH THE CAR.

"When the public recognizes the quality of the Four you will not be able to turn them out fast enough. I have yet to find a person who has been able to find any fault with the car. The appearance is good and every one appreciates the simplicity of the motor."

L. H. SMITH, St. Paul, Minn.

GOOD LEATHER.

"I am more than pleased with the quality of leather in the Jeffery Four."

D. T. BUSSEY, Atlanta, Ga.

MORE THAN GRATIFIED.

"The Four is far beyond my fondest hopes. I have driven it a mile and a half per hour in high and I sure have them thinking and thinking hard."

W. D. FAIRES, Macomb, Ill.

FIRST REAL CAR.

"We have driven many cars of other makes but the Jeffery Four is the first real car we ever had."

DRS. MOYER & MOYER,
Niagara Falls, N. Y.

A MASTERPIECE.

"We want to compliment the Jeffery Company on the production of the masterpiece—the Four and the Six."

WOODWARD CARRIAGE CO.,
San Antonio, Texas.

SMOOTH RUNNING.

"The Jeffery Four is the smoothest running four cylinder car that I ever operated. I think it is a wonder."

JUD JOSLYN, Rockford, Ill.

AN ENTHUSIASTIC OWNER.

"The Jeffery Four is a wonderful car."

PERCY W. DAWLEY,
Ogdensburg, N. Y.

HE LIKES IT!

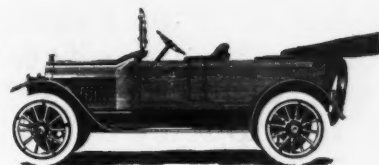
"My Jeffery Four is a peach."

S. V. WIRICK, Rochelle, Ill.

ECONOMICAL.

"I got twenty miles to the gallon with the Four on a continuous hilly road."

PRINCE WELLS, Louisville, Ky.



The Jeffery Four \$1450

Specifications

MOTOR—High speed, high efficiency, block-type; 38 horsepower; 3¾ inch bore and 5¼ inch stroke.

STARTING—LIGHTING—Electric, fly-wheel type.

LUBRICATION—Combination force feed and splash.

IGNITION—Bosch Duplex.

CONTROL—Left drive and center control.

CLUTCH—Cone type, faced with best quality chrome leather.

BEARINGS—Imported annular ball bearings throughout.

OIL CAPACITY—Two gallons.

FRONT AXLE—One piece "I" beam section, forging of vanadium steel, double heat treated.

REAR AXLE—Full floating, ball bearing; shafts of chrome nickel steel, heat treated.

FRAME—Extra heavy pressed channel steel.

TREAD—56 inches. 60 inches optional.

WHEEL BASE—116 inches; car turns in 42 foot circle.

WHEELS AND TIRES—34x4; demountable rims.

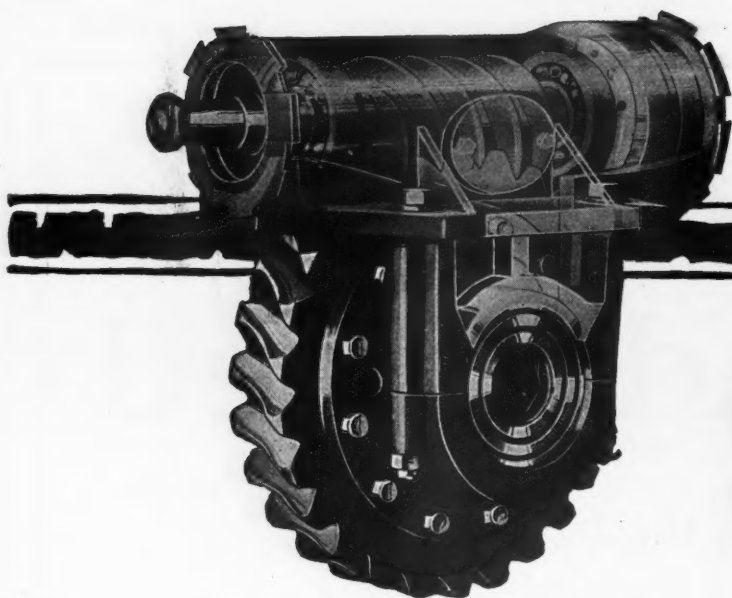
SPRINGS—Front axle, drive shafts of vanadium steel.

TRANSMISSION—Selective, sliding gears, four speeds forward and reverse.

COLOR—Brewster green.

The Thomas B. Jeffery Company
Main Office and Works, Kenosha, Wisconsin





SHELDON

SIMPLY in keeping with our determination to take both industry and buying public into our absolute confidence, both as to our manufacturing and selling policies, we made an announcement a few weeks ago concerning the question of protecting car and truck buyers from being imposed upon by over-rating of the carrying capacity of trucks using Sheldon equipment.

SPRINGS

Much to our surprise this statement brought forth a considerable amount of favorable comment from both customers and trade—comment that indicates an absolute need on the part of manufacturers of protecting the buying public against this practice of overrating. In other words, it would appear that there have been a great many sufferers from the sale of trucks in which the carrying capacity rating was in excess of the capacity for which the axle was built.

Because of the interest that this matter created we feel justified in repeating again the substance of our previous advertisement which provoked this comment.

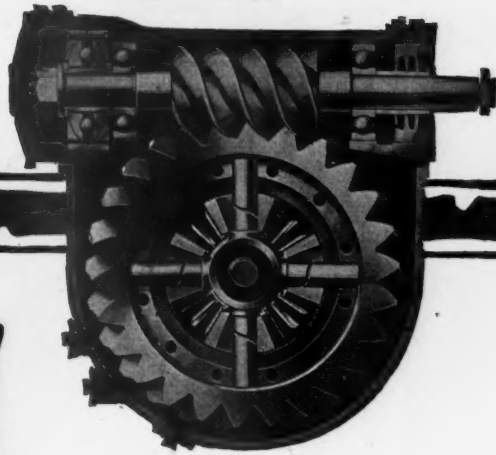
Sheldon Truck Parts are sold only to manufacturers who will agree to use them on trucks with a carrying capacity for which such parts are designed.

In the production of any part the parts-manufacturer figures a factor of safety which will take care of occasional extreme stresses and strains due to exceptionally hard driving and the occasional over-loading of the completed unit in the hands of the consumer. This factor of safety is necessary for the economical operation of the finished product by the consumer. But because of severe competition and narrow-sightedness of some manufacturers various parts built as equipment of certain capacity trucks have been placed in trucks that were ultimately sold as of far greater capacity than the parts originally were designed to accommodate.

SHELDON AXLE CO.,

Makers of Springs and Axles for Heavy Duty Service for more than 50 years

LDON



The dealer in turn in offering this truck to the consumer has felt that if it were rated at three tons it could carry four, so that when the truck actually became operative all of the factors of safety were being taxed to the limit every minute to make good. Result—that when the exceptional did occur there was no factor of safety left to take care of it—there was a broken truck and a disappointed user.

The Sheldon Axle Company simply insists that the factor of safety which it builds into every single product which leaves the factory shall be delivered

the ultimate consumer in every conceivable manner.

This selling policy is along the same lines as our designing and manufacturing policy, as evidenced in the construction particularly of the Sheldon Worm Gear Axle. Here is a product in the design of which the best engineering brains of this continent and the other have been allowed to have full sway without being hampered in any way, shape or manner. Our instructions were simply to design and produce the highest type, the most efficient worm gear axle that was possible to be made.



to the consumer for his protection. For that reason we insist that every manufacturer who uses Sheldon Products shall sign a contract, part of which is the following clause:

"The buyer agrees to use the material called for in this order on trucks with a carrying capacity as given herein. Any departure from this agreement relieves the seller of all responsibility for breakage and the seller may at his option discontinue furnishing additional equipment for such trucks."

There is nothing revolutionary in this policy at all. It is just good, plain business common sense, and it is in keeping with the general policy throughout the manufacturing and selling end of the Sheldon Axle Company—namely, to give the maximum of service to

As a result we have been able to produce today unquestionably the most efficient, most durable and most fool-proof axle known to the manufacturing world—the axle which has been built for the sole purpose of giving the ultimate of service to the consumer, and not for the purpose of selling some particular type of bearing. And these same policies apply right on down through every product, whether it be rear axles, or front axles, springs or brake and radius rod equipments. Our thought has never been that of price in the sense of a cheap product, but only the production of a quality product that will give the maximum of service to the ultimate consumer and which can be sold at a price that is commercially practical. And these policies are of equal interest to the manufacturer, to the dealer and to the consumer. They protect you all.

Wilkes-Barre, Penna.

CHICAGO: 122 S. Michigan Blvd. SAN FRANCISCO: 444 Market St. DETROIT: 1215 Woodward Ave.



Tiredom's Upper Class

Dear Sir:

It isn't extra price which marks the upper class in Tiredom.

Fanciful things don't count here. Nor does exclusiveness. Tires are mere utilities.

And Goodyear prices—due to mammoth output—count just as much as other Goodyear savings.

Real Aristocracy

The real aristocrats in Tiredom are No-Rim-Cut tires. They out-sell any other.

By exclusive features and extra quality they won the ruling place. These are the royalty of Tiredom as class is measured there.

Yet many makes of tires are selling for more than Goodyear prices.

Badges of Class

These things, in Tiredom, are the sole criterions of class.

No rim-cutting. We prevent that in a faultless way—a way which we control. It saves a ruin which is wrecking one old-type tire in three, as per our last statistics.

Fewer blow outs. Our "On-

Air" cure—used by us alone—saves the major cause of blow-outs. It adds to our tire cost \$450,000 per year.

Fewer loose treads. A patent method—used by us alone—reduces this danger by 60 per cent.

Perfect anti-skids. Our All-Weather treads are tough and double-thick. They are flat and smooth, so they run like plain treads. Their grips are deep, sharp and resistless.

Lowest cost per mile. These features, plus low Goodyear prices, insure that to our users. And hundreds of thousands have proved it.

No Pose of Price

No-Rim-Cut tires don't pose as extra-priced. They once sold for more than rival tires, because of these costly features. But mam-

moth output and new efficiency cut that cost immensely, and you get all the saving. Our average profit last year was 6½ per cent.

First we saved you rim-cuts, blow-outs and loose treads. Now we save you in the price per tire. As a result, men now are buying, on the average, 125,000 Goodyear automobile tires per month.

True Extra Value

We know but two ways to get extra value for an extra price. The price of some tires will buy you a half-inch wider Goodyear. That extra size, of course, means extra service. Or the price of three tires, extra-priced, will buy you four of Goodyears. And four tires will surely outlast three.

But, size for size, you'll never find a better tire than Goodyears. In the four ways cited you'll find none as good.

Remember that. High price marks class in some things, but it's a detriment in tires. It adds to dead expense.

Any dealer will supply you Goodyear tires at Goodyear prices if you tell him that you want them.



THE GOODYEAR TIRE & RUBBER CO., Akron, Ohio

Toronto, Canada

Branches and Agencies in 103 Principal Cities

London, England

Dealers Everywhere

Mexico City, Mexico

Write Us on Anything You Want in Rubber

(1810)

Reo the Fifth

A Super-Car

\$1,175 Equipped
F.O.B. Lansing

TOURING CAR
or ROADSTER

The Story of Reo Success

And Why a Few More May Now Share It

The season just past was by thousands of cars, the largest in Reo history. Month after month we built 60 per day, but we never caught up with our orders.

This summer we started three enormous additions. Now we have a capacity of ninety per day. We are ready to invite a few more dealers—in unassigned sections—to share in this Reo success.

The Past

The Reo is an old, old car. Its builder—Mr. R. E. Olds—is the Dean of Designers. He has built cars for 27 years.

But Reo the Fifth came out three years ago as his final attainment—as the car which marked his limit. It has changed in body design and equipment. It has been bettered in countless ways. But it always has embodied the best we know, regardless of time or cost.

It cost us then about \$200 more than if built by the usual standards. And it still costs about that extra.

It is a car of extremes—of over-capacity—of costly and careful construction. But tremendous output and standardization have brought the cost down. The price today, with full equipment, is \$220 less than it used to be.

Reo the Fifth was built for men who buy their cars to keep. For men who know troubles, and wish to avoid them. For men who seek low

cost for upkeep. And for men who want their cars to stay new.

There was never a car in this class which, year after year, would render such ideal service.

We told men about it by the best advertising campaign—and one of the largest—that ever was known in this line. The first season's demand was twice our factory output. And that demand has grown and grown, as these cars by the tens of thousands proved every claim we made.

The Future

After three years, Reo the Fifth stands on the firmest foundation ever given a car in this class. Our sales are exceeding by 50 per cent, every similar-season record.

Our present price gives the greatest value to be found in this class of car. Our design and equipment are up-to-the-moment. And our prestige makes Reo the Fifth the leader of its class.

It is, beyond any question, the best-built car that ever sold near this price. It is, with its new-style body, one of the handsomest cars of the day.

No car is better advertised. And no name in Motordom stands for more that men look for today.

We have dealers now in 1155 towns. With our increased capacity we can add a few more—not many. We shall be glad to hear from dealers who are trying, as we are, to build on firm foundations.

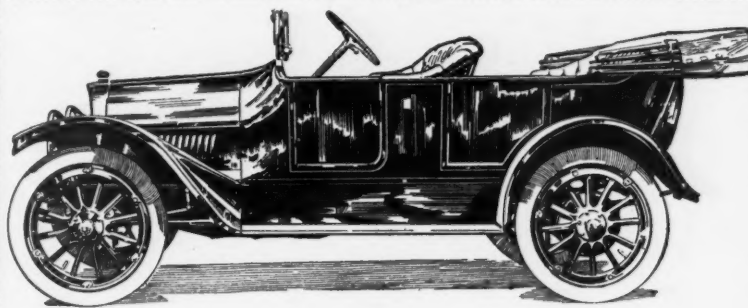
Not a car in this class begins to offer such men such an opportunity.

REO MOTOR CAR COMPANY

Lansing, Michigan

Canadian Factory, St. Catharines, Ont.

Canadian Price, \$1575



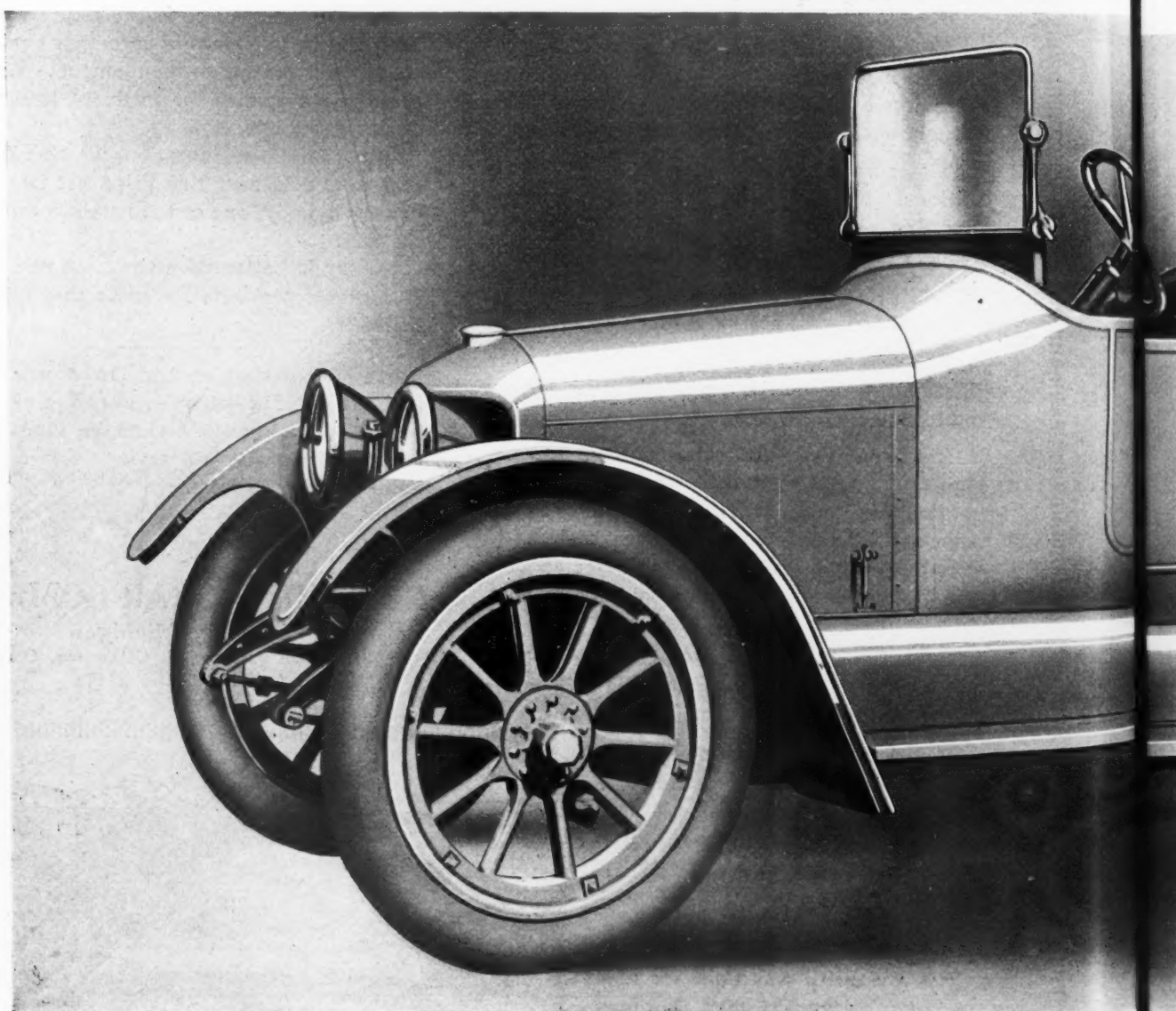
Streamline Body
Electric Lights
Electric Starter
Dimming Searchlights

One-Rod Control
Non-Skid Tires on
Rear Wheels
35 Horsepower

Tires 34 x 4
15 Roller Bearings
190 Drop Forgings
Complete Equipment

Mr. Progressive Dealer:

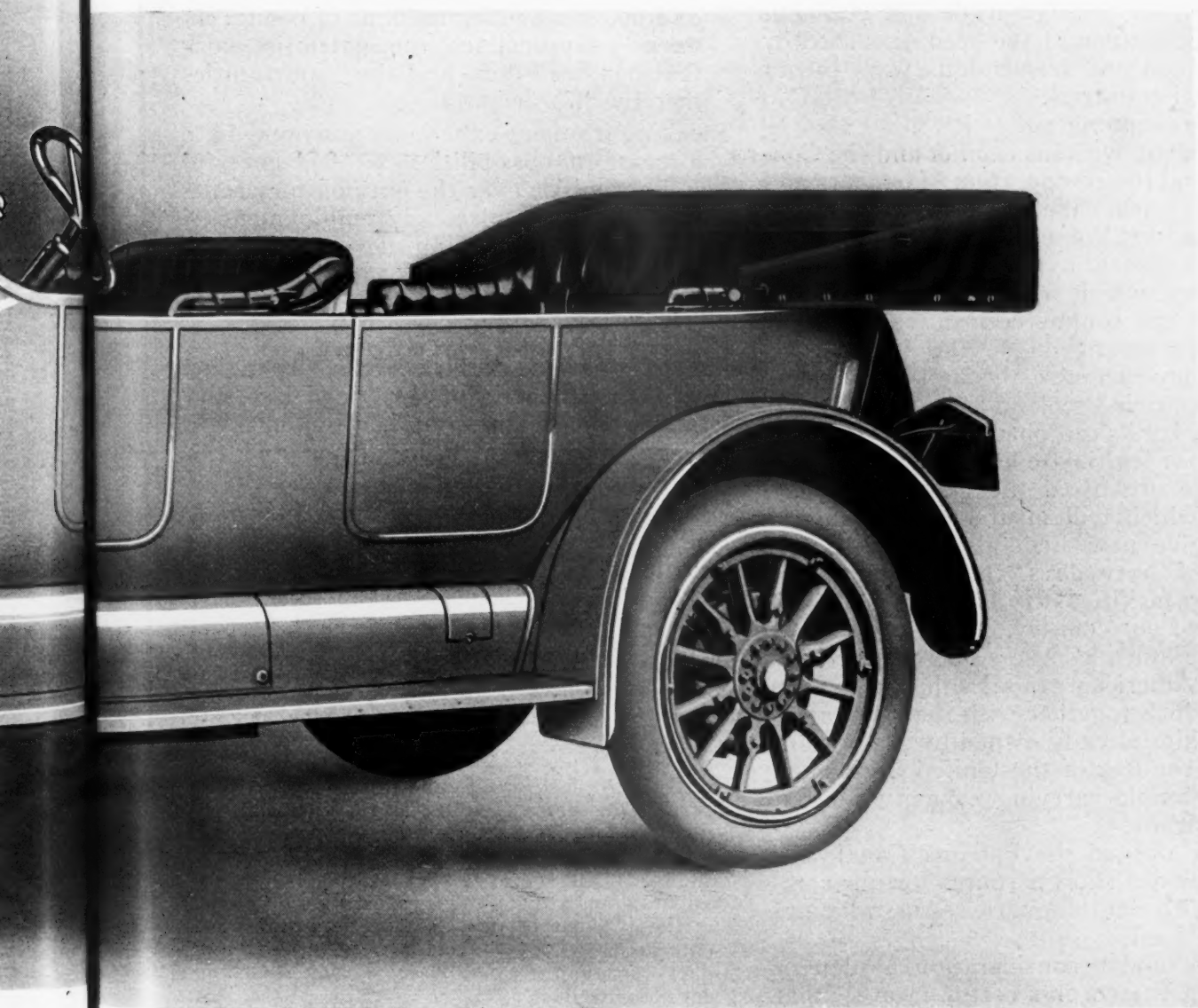
IF you have not already done so, inform yourself of the wonderful possibilities and extraordinary sales opportunities of the new model 1915 Weidely motor in the Premier chassis by sending for a technical, illustrated description of the motor that has simplified the conventional type of modern automobile engine by over forty per cent. Sales competition and resistance has increased two-fold through competition between cars almost identical in design and construction. Added to this, we now have existing conditions due to foreign disturbances.



PREMIER MOTOR MFG. CO.

When Writing to Advertisers, Please Mention Motor Age.

The Premier-Weidely possesses the sales edge which will enable you to ride over existing competition between identically similar trade competition. An examination of the simplified Weidely and a demonstration for speed, power, smoothness of running, "get-away" and economy, will convince you that your opportunity to do a great business in a high grade car lies with the Premier-Weidely, because of its admitted advance over the ordinary type. Get in touch with us for full particulars and unsigned territory. And don't forget the conditions that will surround you later unless you market something better and different than the conventional type in the other fellow's salesroom. Be up-to-date and show the latest.



G. COMPANY, INDIANAPOLIS

When Writing to Advertisers, Please Mention Motor Age.



Optimism and Opportunity

As we said in our newspaper advertisement of August 16th, "it is very good these days to be an American."

During this month our country has encountered a trying experience in which our finances, our foreign trade and even our domestic business have been disturbed by the sudden and tremendous wars in our ancestral countries.

Yet, we are coming out of it well.

The President, with his cabinet and the Congress, and the co-operation of bankers and business men called to Washington for the purpose, have promptly and nobly met the emergency by sensible rulings and wise laws, which will largely free our industries and commerce from restraint.

They have arranged for the issuance of emergency currency, through amendment of the Aldrich-Vreeland Law, under which national banks can obtain all the currency needed for legitimate business.

They have organized the Federal Reserve Board which will insure the opening of the twelve new Federal Reserve Banks inside of sixty days, thus giving ample banking facilities for business to every section of our country.

They have amended the ship registry laws so that American capital will buy foreign ships, which together with the large number of ships already owned by Americans, will fly the flag of the United States and furnish ample carrying capacity for our foreign trade.

They have opened the Panama Canal, and thus provided shorter routes for our commerce with South America, Australia and the Far East.

They have under consideration a plan of financing the surplus cotton crop so that

our southern planters will be enabled to hold their cotton until normal markets are restored.

The Studebaker Corporation with its 62 years of business experience, its thousands of employes and its millions of capital invested—appreciates the patriotic work that has been done and the opportunities thereby afforded.

Speaking from our experience and immediate forecast of possibilities, we feel cheerful and optimistic over the outlook for profitable business and steady employment of labor, with increasing developments of foreign trade in neutral countries.

America is today the clearing house of the world.

The great nations of the earth are depending upon the integrity of her friendship—the safety and saneness of her diplomacy—the extensiveness of her trade and the soundness of her finance.

It is a time for Americans to show their optimism, their patriotism and their aggressive earnestness.

The foundations of our National prosperity have been laid too deep and too strong to be seriously disturbed, even by so great a catastrophe as the war of all Europe.

We regret deeply and sincerely that the war must be—yet, we are in nowise to blame and are happily far removed from the theater of its activities.

Friendship we feel for all—and toward all we must remain in both thought and action entirely neutral.

Our duty to ourselves and our moral obligations to the rest of the world compel us Americans to be up and doing; to maintain a cheerful and hopeful spirit, to operate our industries and business enterprises, to pay our bills as usual, and to conduct our affairs generally on conservative, but enthusiastic lines.

The Studebaker Corporation
South Bend, Ind. Detroit, Mich.
 Manufacturers of Studebaker Motor Cars and Vehicles

What Happens After You Sell a Car?

The new owner is entitled to satisfaction—the dealer to a profit.

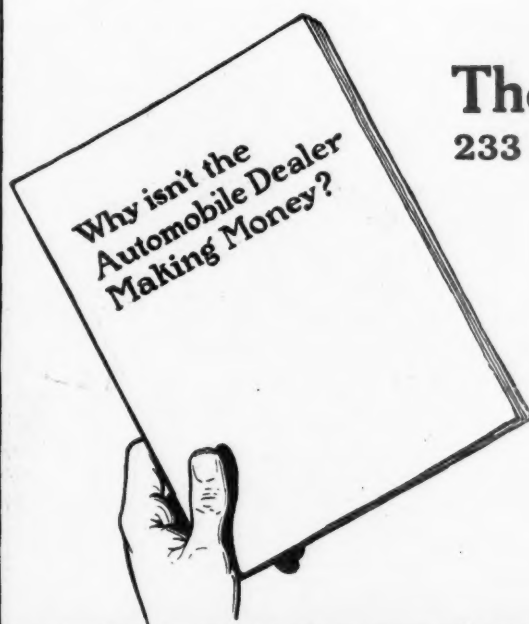
Naturally the owner looks to the dealer for **service**. The owner considers it his due. The dealer should be in a position to render it easily and at no great expense.

But, why should the dealer burden himself with the added obligation of rendering a service that in addition to being very costly to himself, is not permanent for the user?

Why should the dealer be forced to make his sales-room a "service station" for some motor car accessory manufacturer?

Prest-O-Lite stands for user satisfaction and dealer profit. There are no "adjustments" or repairs on the lighting system to eat into the dealer's margin when he sells a Prest-O-Lite equipped car.

"Servicitis" has been thoroughly diagnosed in a book we've prepared for you. This book points the way out. Use the coupon.



The Prest-O-Lite Co., Inc.
233 Speedway, Indianapolis, Ind.

The Prest-O-Lite Co., Inc.,
 233 Speedway, Indianapolis, Ind.
 Please send "Why Isn't the Automobile Dealer Making Money"
 to.....

 Handling
 Makes of cars.

Boston Starter Catechism

What Is the Boston Starter?

A SIMPLE substantial mechanism by which the Ford motor is started from the car seat by pulling a handle.

How Does It Work?

THE ACT is much like that of pulling an oar. The Boston Starter does not operate by air, electricity or springs. Like the crank it requires man-power, but less than the crank. It accomplishes what the crank does, but better and easier.

Does It Work?

WE GUARANTEE the Boston Starter to turn over the Ford motor from the car seat as certainly as the crank will do it from the ground. We guarantee that, but only providing it is properly installed, according to our directions. We do not guarantee it as a cure for ignition troubles or to "tune up" a car or put gasoline in the tank.

How to Guard Against Backfire

THE BOSTON STARTER mechanism automatically releases in case of backfire. As a further precaution, the spark is automatically retarded to the proper firing position.

Does Putting the Boston Starter On Hurt the Car in Any Way?

ABSOLUTELY NOT. As for looks, nothing but pull handle shows. In weight, it adds only 12 lbs. A hole in the dash, and a small hole in the frame remove not one particle of strength or power from the car.

How Does a Car Look Equipped with Boston Starter?

LOOKED AT from the *outside*—no crank—that's the only difference.

Is the Boston Starter Easy to Install?

ANY MACHINIST autowise, or any autoist machinewise, can readily install by using our illustrated directions.

Can the Boston Starter Be Put on Any Ford Car?

It is made to fit the Model T Ford. If car is 1911 this fact should be mentioned.

Where Can I Get the Boston Starter?

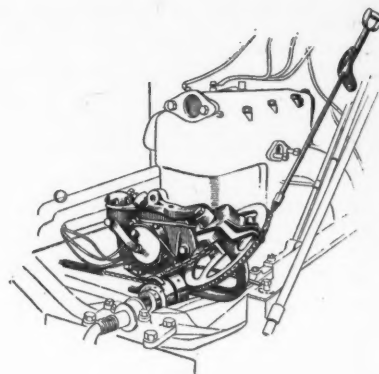
THE BEST DEALER or garage man, the one in whom you have confidence, should be able to supply you with the Boston Starter. If he is not, send us his name and address. When writing us that you are interested, telling us that you would like to have a *good* starter on your car, please let us know what year you bought your car, about what mileage it has been run, and whether you do any work on it or leave it all to the garage man. We will immediately furnish your dealer with all information necessary to install the Boston Starter for *you*.

Write for Descriptive Catalog today

Automatic Appliance Co.
172 Columbus Ave., Boston, Mass.

New York Branch
1876 Broadway

The BOSTON STARTER for FORDS



400 Chalmers Dealers Say 1915 Chalmers Cars Offer Greatest Automobile Values



Four hundred Chalmers dealers, representing every part of the country, recently assembled in Convention at the Chalmers factory. These dealers buy each year more than 8,000 Chalmers cars. At this convention these dealers showed their enthusiasm, their faith in Chalmers cars by contracting for more Chalmers Sixes than we can build for 1915.

The endorsement of Chalmers 1915 cars by these dealers means much to a dealer who desires to handle a fast selling profitable line of automobiles.

These Chalmers dealers are well established business men. Most of them have been in the automobile business for years. Many of them could handle any make of automobile. But they have chosen the Chalmers year after year because they believe in Chalmers cars and the Chalmers Company.

These dealers are the most critical buyers in the motor world. They know automobile values. Their business success depends upon the correctness of their judgment.

So when these men, without exception, say that Chalmers 1915 cars are best for the price, when they back this assertion with orders for these cars and pay down their money for them in greater quantities than ever before, their judgment should convince any dealer of the quality and merit of 1915 Chalmers cars.

Chalmers Dealers Have Permanent Business

These dealers have chosen the Chalmers line because they are building up a permanent business in their territories. Even though some other dealers may sell more cars temporarily, our dealers are in accord with the Chalmers policy of building for the future. They realize that the Chalmers Company is in business to stay.

A Chalmers agency immediately gives to a Chalmers dealer a standing in his territory. Chalmers cars have always been known as good cars. Chalmers cars have universally given satisfaction to the many thousands of Chalmers owners.

Chalmers Dealers Endorse "Quality First"

And so, regardless of temporary fluctuations in automobile prices, these 400 Chalmers dealers unanimously endorse the company's policy of "Quality First."

The Chalmers Company is one of the few automobile manufacturers sure enough of its market to feel justified in putting even more quality in its cars with an increase in price; instead of cutting the quality to meet price reductions.

Our dealers at the convention said they knew there were plenty of automobile buyers in their communities to whom price was not the first object—people who are willing to pay a few hundred dollars more for the extra satisfaction of owning a car of the Chalmers quality and reputation.

And in every community in your territory there are many such buyers. The Chalmers agency offers you this kind of a market—quality market which knows automobile values and which soon will build up for you, as it has done for these 400 dealers, a permanent, successful and profitable motor car business.

Know 1915 Chalmers Cars

The beauty and comfort of the new 1915 models as well as with their mechanical features will impress you as much as it did our dealers. You will be pleased with the smartness of the body lines, the perfect appointments and the comfortable seating arrangements. And with all the beauty and comfort of Chalmers cars you get chasses that are right. This is the unanimous opinion of our dealers because they know how little they have been called upon for repairs or adjustments on last year's cars. 1915 Chalmers Sixes have proved themselves in service.

There is still some Chalmers territory open. There is a chance for you to obtain this valuable Chalmers representation.

Chalmers Motor Company, Detroit

EISEMANN

Eisemann products are not affected in any way by war conditions in Europe.

Not only have we on hand ample stock and materials to take care of our regular customers for many months to come—but we are also in position to increase our production greatly should occasion arise.

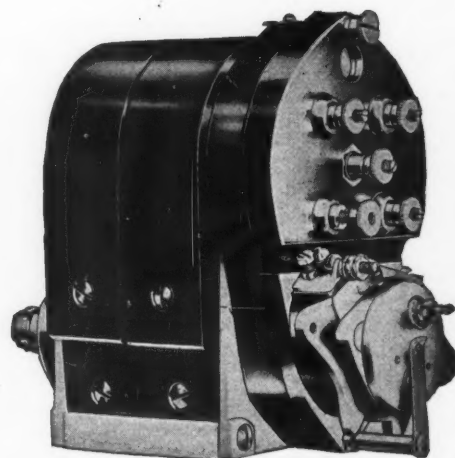
We therefore have no hesitancy in offering our assistance to any and all manufacturers who may not be able to have their requirements taken care of elsewhere.

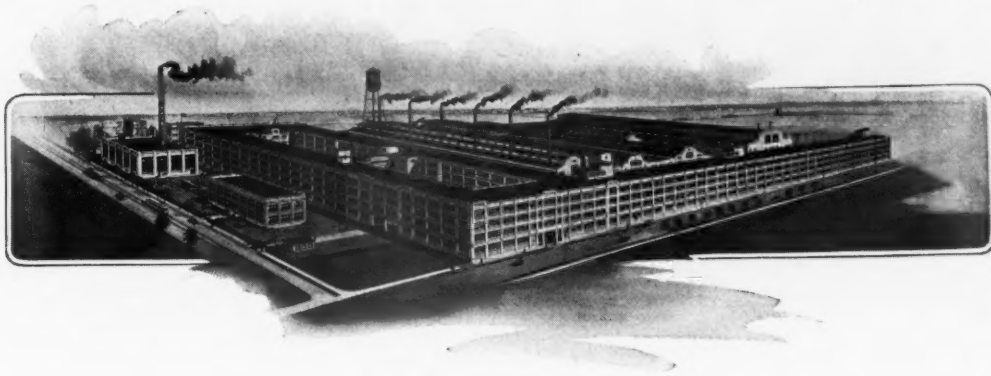
**Eisemann Not
Affected by War**

The Eisemann Magneto Co.

Sales and General Offices
32-33d St., Brooklyn, N. Y.

New York Indianapolis, Ind. Detroit, Mich.
128 W. 52d St. 415-417 N. Capitol Ave. 802 Woodward Avenue.





DODGE BROTHERS

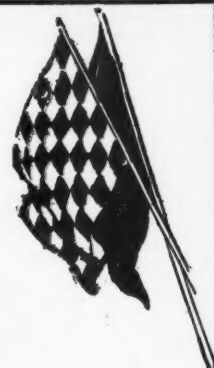
DETROIT



NOTE—Up to August 21st, 6126 dealers had expressed their desire to sell Dodge Brothers' Motor Cars.

RAYFIELD

CARBURETORS



Smash More Records at Elgin

The Elgin Races once more decisively demonstrated the superiority of the Rayfield over all other carburetors.

In the big Elgin National race, Pullen, whose Rayfield-equipped Mercer was fitted with an unusually small motor, took second place, 70 seconds behind De Palma in a Mercedes.

Pullen drove the first American car to finish in the big race; never stopping from start to finish and averaging over 73 miles per hour. In this event Pullen made a new record for economy in racing. During the entire distance of 301 miles, he actually averaged over 15 miles to the gallon of gasoline.

On both days Rayfield-equipped cars made the fastest laps.

In the first race, two Rayfield-equipped cars tied for the record of the fastest lap. Spencer Wishart in a Mercer and Ralph Mulford in a Peugeot both turned the circuit in 6.11 flat, an average speed of 81 4/10 miles per hour for the distance of 8 1/2 miles.

In the second day's racing, Wishart in his Rayfield-equipped Mercer made the fastest lap; time 6.20.

By this remarkable performance, the Rayfield proves that it is not only the greatest Carburetor for speed, power and reliability, but that it is the most economical under all conditions. For flexibility and all-around performance, it has no equal. Its general efficiency on pleasure and commercial cars has been demonstrated beyond question.

Write for our new folder, descriptive of Rayfield Model G

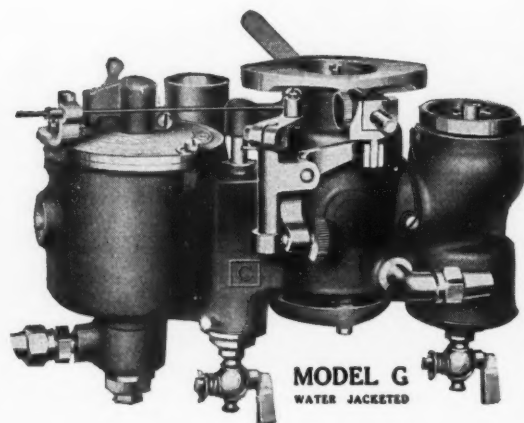
FINDEISEN & KROPF MFG. COMPANY

2109 Rockwell St., Chicago, Ill.

BRANCHES: 1140 Michigan Ave., Chicago.

1211 Woodward Ave., Detroit.

1902 Broadway, New York



MODEL G
WATER JACKETED

When Writing to Advertisers, Please Mention Motor Age.

The New KISSELKAR 36 "Four"

\$1450



Every
Inch
a
Car

THE SINGLE COMPARTMENT, TWO-DOOR TOURING BODY

An Unprecedented Value

IF you have been waiting for a car of established reputation among *upper class* automobiles—at a price far below that at which any car of approximate quality has been offered before—*here it is.*

If you have been driving a small car and are longing for one of greater riding comfort, more solid construction, completeness and style, at a figure you will feel is right—*here it is.*

If you have been watching for a car that can be comfortably driven in all weather, winter and summer, without involving the expense of changing bodies—*here it is.*

Right Weight and a Great Engine

The powerful, smooth running $4\frac{1}{4} \times 5\frac{1}{2}$ Kissel-built motor will give you a range of speed from five to fifty miles without shifting gears. It is the best engine Kissel ever built.

The Detachable Top Touring Car in Summer—Sedan in Winter

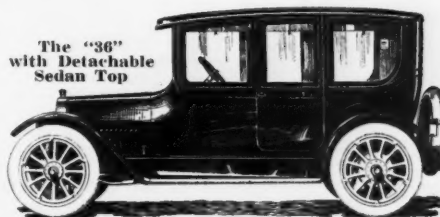


The Detachable Sedan Top

The KisselKar Two-Door "36" with the new Detachable Sedan Top is just what thousands of tourists have been waiting for—a summer and winter car at a reasonable cost. You can buy the car with the top attached at a total outlay of \$1,800, drive it all winter and in the spring remove the top without expert assistance.

To get the same service in the past, a full separate sedan body was required, costing from \$700 to \$1,200 plus the carriage maker's charges twice each year. Now the same luxury and satisfaction can be obtained in one car and one body at a saving of hundreds of dollars. It has electric dome and corner lights—in fact, every little appointment that adds to the completeness of the most exclusive sedan.

Write for literature and complete information regarding the KisselKar 36 "Four" and the Detachable Sedan Top.

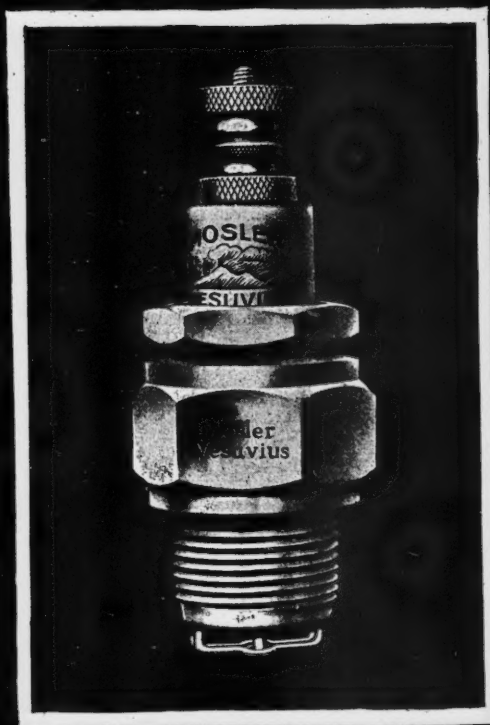


The "36" with Detachable Sedan Top

Kissel Motor Car Co., 121 Kissel Ave., Hartford, Wis.

New York, Chicago, Boston, Philadelphia, St. Louis, Milwaukee, Minneapolis, St. Paul, Dallas, Kansas City, San Francisco, Los Angeles, Seattle, Omaha, Baltimore, Pittsburgh, and 300 other principal points.

Mosler Vesuvius Plugs



Have no equals for speed and power.

Made to fit any engine, any thread.

Stone Insulation is practically unbreakable.

Unique method of assembly renders Vesuvius Plugs absolutely gas tight and insures perfect adjustment of sparking points.

A. R. MOSLER & CO
NEW YORK N. Y.

POWERFUL INDESTRUCTIBLE AND SURE

Powerful because of faultless design.

Indestructible because of the finest materials.

Sure because of methods and workmanship employed in manufacture.

EXCLUSIVE FEATURE

Note ears on collar.

The only plug that has means for assembly without rotating the insulator.

Washer and ears take up all friction of the nut and give the direct straight pressure which makes the plug absolutely gas tight.

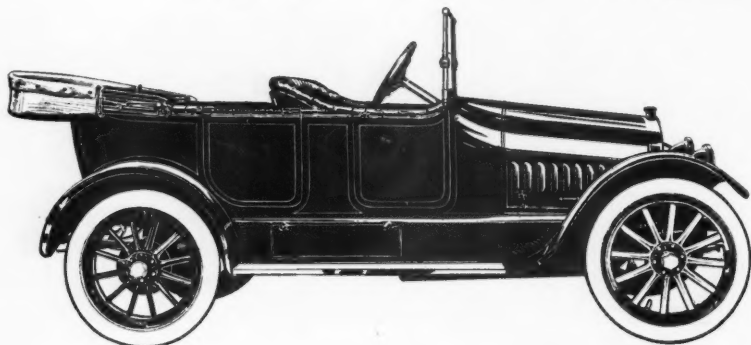


Collar takes up friction of nut.

Collar cannot turn when nut is tightened because ears on collar fit into slots in shell.

Herff-Brooks "Four"

This \$1100 Four has a 118 in. wheelbase and a 40 horsepower motor



Many present-day four cylinder cars are small and lack power. The Herff-Brooks is not one of these. It is large—118 in. wheelbase—and its motor develops 40 horsepower.

This means that the \$1100 Herff-Brooks Four gives you the comfort of the good sized car with ample driving power.

In this, as well as in other regards, the Herff-Brooks stands out among Fours. \$1100 is only \$25 more than \$1075 and only \$150 more than \$950, yet in comparison with cars at those prices the Herff-Brooks is first by a wide margin.

The Herff-Brooks has a five bearing crank shaft. This gives perfect alignment, rigidity, long life. All highest grade four cylinder cars have five crank shaft bearings, like the Herff-Brooks. Most other mod-

erate priced cars, though, supply only three crankshaft bearings.

For ignition Herff-Brooks uses the Bosch High Tension Magneto DU System. Nothing better is known. What other low priced four uses as good ignition? Remember, Herff-Brooks is the DU System.

Timken and New Departure bearings do the work in Herff-Brooks transmission and rear axle. They are acknowledged the world's best.

The 18 in. steering wheel folds down to give ample room for anyone to leave or enter the front seat. This feature is one made famous by the manufacturer of perhaps the best known four cylinder cars in the country. It is simple and convenient.

Herff-Brooks tires are the famous 34 in. x 4 in. Goodyear, No Rim Cut.

The top is a one man top, with easy adjusting curtains.

These advantages belong to the Herff-Brooks Four. You can get them nowhere else except at much higher price.

In size, in power, in style, in equipment, the \$1100 Herff-Brooks leads.

40 Horsepower
Five Crankshaft Bearings
Drop Down Steering Wheel
One Man Top
Complete Equipment
118 in. Wheelbase
34 in. x 4 in. Tires
Bosch High Tension Magneto DU System
Electric Lighting and Starting
Stewart Speedometer
Four Cylinders
Honeycomb Radiator
Demountable Rims, Extra Rim
Timken & New Departure Bearings
Turkish Upholstery
Stromberg Carburetor

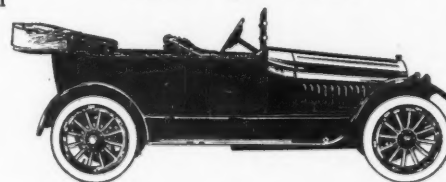
Herff-Brooks cars are completely manufactured, not assembled, in one great plant. We will pay the railroad expenses of any dealer who, coming to Indianapolis to inspect our works, contracts for Herff-Brooks cars.

Accept these advantages in Six cylinder Quality and Price—

50 Horsepower
Highest Grade Bosch High Tension Magneto DU System
Honeycomb Radiator
Stewart Speedometer
34 in. x 4 in. Goodyear No Rim-Cut Tires
Six Cylinders
Electric Starting and Lighting

Timken & New Departure Bearings
18 in. Folding Down Steeringwheel
124 in. Wheelbase
Seven Crankshaft Bearings
One Man Top
Headlight Dimmers
Demountable Rims, Extra Rim
Complete Equipment
Stromberg Carburetor

"Six" \$1375



WRITE FOR CATALOG MA

The Herff-Brooks Corporation, Indianapolis, Indiana

10,000 Miles Guarantee



Brictson Tires are backed by the strongest guarantee ever put behind a pneumatic tire

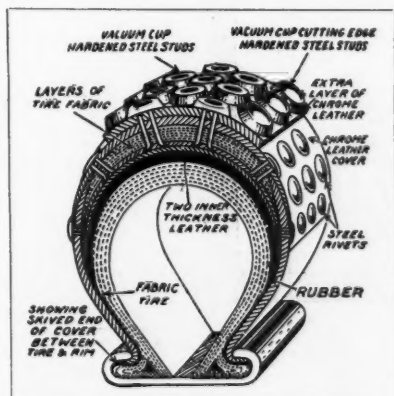
Never before have tire users been offered such assurance of continued service

Brictson Pneumatic Tires give you real Tire Economy

Brictson Pneumatic Tires are sold under a specific 10,000-mile written service guarantee, based on the results of six years' experience. They free you from the dangers of punctures, blow-outs and rim-cuts. Proof against oil, gasoline and ruts. Their wonderful resiliency contributes greatly to your comfort when you ride.

Your Tires Can Readily be Rebuilt the Brictson Way

If the fabric in the tires you are now using is in good condition, we can take them and make them proof against rim-cutting, punctures, blow-outs, side-wall breaks, skidding, ruts and oil. This will give you thousands of miles of added service.



Ten days' free trial offer. Try Brictson Tires at our risk

To remove any possible doubt regarding the merits of Brictson Tires, and to back up our statements fully, we will allow you to use these tires on your car for ten days at our risk. If you do not find them perfectly satisfactory in every way, return them to us at any time within ten days and we will refund the entire purchase price. Send your order today.

For full particulars mail back the coupon.

The Brictson Mfg. Co. 1294 Brictson Bldg.
Brookings, S. Dak.

Mail Back This Coupon

Brictson Mfg. Co.,
1294 Brictson Bldg., Brookings, S. D.

Please send me full particulars about Brictson Tires, also explain how my own tires can be rebuilt the Brictson Way.

Size of Tires.....

Name

Address

Dealer's Name.....

Sound is caused by vibration. In an automobile vibrations set up objectionable noises. Some of these vibrations are so minute that they are imperceptible to the passengers, while others are in the nature of a blow.

Most automobile bearings transmit and intensify these noise-making vibrations—Hyatt Bearings on account of their spiral construction—absorb vibrations—cushion road shocks, and are known as Hyatt Quiet Bearings.

Two books, one about motor car bearings in general for prospective purchasers, the other for automobile owners, will be sent on request.

"Hyatt Quiet Bearings"

HYATT ROLLER BEARING Co.
DETROIT, CHICAGO
NEWARK, N.J.



Lexington

LIGHT SIX, \$1875

Announcement of the 1915 Series

The same remarkable value, utmost refinement in design and finish, advanced engineering practice that have characterized Lexington cars in the past are features that guarantee service to you in the Lexington 1915 series.

Choose Your Car in a Straight Business Way

Too much attention and thought cannot be put into the purchase of your car. You should consider the master minds designing it, the materials from which it is made, the reliability and financial standing of the company manufacturing it and their past manufacturing records, etc. All of these are vital factors in the choice of a car. In the Lexington we gladly invite your most careful consideration of them.

The Lexington Has Proven Its Value

You find your ideal car embodied in the new, beautiful Lexington Light Six. Each essential in motor car building has been included. No features that make for dealer or owner satisfaction have been overlooked.

The Lexingtons for 1915 are worthy successors to the long line of motor cars that have, in every way, stood the strain and tests of daily use in owners' hands for six seasons past that lead up to this new, proven 1915 Lexington series.

Included in it are a superb Big Six at \$2575.00, and a beautiful Four at \$1375.00, in addition to the extra-value Light Six.

Write for complete descriptive matter of any or all models.

The wise dealer, who wishes to build his business on the firm foundation of owner satisfaction, will do well to investigate the Lexington proposition. Wherever procurable, Lexington territory means dealer profit, because Lexington cars assure owner satisfaction.

The Lexington-Howard Co.

CONNEERSVILLE, IND.,
U. S. A.

18th Street West

TABLOID SPECIFICATIONS LEXINGTON LIGHT SIX

Motor—50 H. P. Continental.
Carburetor—warmed by connection with exhaust, insuring a volatile mixture.
Ignition—Westinghouse.
Lighting—Westinghouse.
Starting—Westinghouse.
Cooling—Honeycomb type radiator, and centrifugal pump.
Clutch—multiple dry disc.
Springs—Front, semi-elliptic; Rear, Cantilever type, 52" long, suspended in a unique way.
Brakes—Four internal expanding, completely protected against mud, dust and water, large diameters and broad faces.
Steering gear—Worm and gear type with 18" notched, ebonzolized wheel.
Drive—Left side, with right-hand control.
Wheel base—128".
Bodies—Four, five or six passenger touring, and two passenger roadster.
Black enamel hood, fenders and splash plates, and blue black body. Nickel-plated bright work, high quality, straight grain, semi-bright leather.
Hair carpet in tonneau.
Aluminum toe boards in front.
Running boards covered with finest quality cork matting.
Equipment—Illuminated instrument board with all instruments bunched in an aluminum plate. Stewart hand-type speedometer. Unique tire carrier. Never-leak one-man top, curtains quickly attached from interior of car. Demountable-detachable rims. Rain-vision, ventilating wind shield. Spartan motor driven horn under hood. Foot rest. Robe strap. Motor driven tire pump. Complete set of tools, jack, etc.
Prices—Touring car, completely equipped as above, \$1875.00 f. o. b. Connersville. Roadster, completely equipped as above, \$1875.00 f. o. b. Connersville.
An exclusive feature, found on no other make of motor car, is the Moore Multiple Exhaust System—a simple device that adds 25% more power to the engine with a decided decrease in gasoline consumption. Its use on Lexington cars is indicative of the advanced and careful design that has made Lexington cars in the past—as they are today—the utmost in any single motor car value.



When Writing to Advertisers, Please Mention Motor Age.

Quality Is Economy

The Varnish we used to call
Palest Motor Car Body Special
we now call, for special reasons,
Palest Motor Car Body

We called it *Special*
while waiting for manufacturers
to confirm our judgment
of its superior values.

Our judgment has been
confirmed in hundreds
of finishing rooms.

Its *flowing* property
is the greatest ever.

It *saves enough time*
and *labor* to make it actually
cheaper than varnish
at half the price.

It is absolutely dependable.
It avoids all uncertainties.
It is dead sure, every time.

One of our oldest
and carefulest Salesmen says:
"I never heard such unanimous
nor such enthusiastic
commendations of any other Varnish."
Our mail gives
the same impression.

The Varnish
That Lasts
Longest

Murphy Varnish Company
FRANKLIN MURPHY, President
Associated with Dougall Varnish Company, Limited
Montreal, Canada

NEWARK
AND
CHICAGO



"Be Sure the Lamps You Buy Bear the Name Edison"

EDISON MAZDA Lamps are generally
used on automobiles, motor trucks, trains,
trolley cars, factories, offices, etc.

Considerable variation in these fields—
nevertheless EDISON MAZDAS are used
because they give the most efficient and
satisfactory service everywhere.

EDISON MAZDA *Automobile Lamps*

are made in the same factories with the
same knowledge, experience and detailed
application that is given to the larger
and more powerful units made by the
largest manufacturer of incandescent
lamps. EDISON MAZDA Automobile
Lamps are constructed with thick strong
filaments designed especially for the
service.

Because of this acknowledged experi-
ence in automobile lamp manufacture,
nearly every engineer of cars and light-
ing systems has adopted EDISON MAZ-
DAS as standard, and practically every
car owner of today when replacing bulbs
is insistent on EDISON MAZDAS—they are
backed by MAZDA Service.

"Be sure the lamps you buy bear the
name EDISON."

EDISON LAMP WORKS
OF GENERAL ELECTRIC COMPANY
General Sales Office Harrison, New Jersey.

The New SAXON \$395



The Automobile Market that Offers the Greatest Opportunity to Dealers

Getting "the Jump" on the New Market

At this stage of the automobile industry **no greater opportunity** offers itself to a dealer than selling Saxon cars.

This is true because the Saxon, by reason of its low price and low maintenance cost commands the **widest market** of prospective purchasers.

That people of moderate income form a fertile field for the disposal of Saxons is proved by the fact that in the four months' time since Saxon shipments were begun over 6,000 sales have been made.

This is a record rule—**more** than any other company ever shipped in the same length of time after starting in the automobile business.

How We Bettered the Saxon

Although we have been so busy supplying Saxon dealers, we have, at the same time, been constantly introducing improvements and adding refinements.

Dealers of long experience have been quick to declare that they have never known a car so nearly perfect at the start, or that has been so rapidly and thoroughly made more appealing to the public.

Daily the volume of orders is mounting higher and higher. The name and fame of the Saxon is spreading by word of mouth of enthusiastic owners all over the country.

We knew there was a tremendous field for a thoroughly good, good-looking, dependable two-passenger car of low operating cost. **And now we've proved it.**

The Saxon has found its market and the market is welcoming the Saxon.

Quality in Known Quantity

The Saxon has proved its high quality in every motoring test, both public and private, to which it has been subjected. It has demonstrated that it is the **greatest two-passenger automobile** in the whole world at anywhere near the price.

It is sturdy and powerful enough for any emergency of the road. It is built to give great comfort and convenience, and it is more roomy than any other. It is a splendid looking car, too, with distinctive lines.

It can be said, unreservedly, that for the man who desires a two-passenger machine, the Saxon is the **best buy at the price.**

New Saxon Gives New Impetus to Sales

The new Saxon, with running board and thirty-eight other advanced features, has given a new vigor to Saxon sales all over the country.

Owners are warm in their praises of the new Saxon and pleased owners make busy dealers.

No other car in the world offers more value for the price than the Saxon, because no other company is content to accept so small a profit per car. But we believe that giving big value means larger and larger sales and results in enabling dealers to make quick "turn-overs."

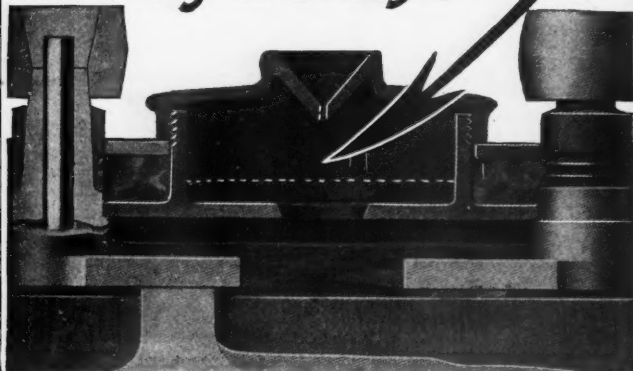
Our plans for a new and exceptionally liberal dealer proposition are now complete. If you are interested in making money, we will probably hear from you at once.

There May Be Open Territory for You—Write

Saxon Motor Company, Detroit, Dept. M

When Writing to Advertisers, Please Mention Motor Age.

*You ought to have **this** on your lighting and starting battery!*



Then you can know what is going on inside. All

GOULD LIGHTING AND STARTING BATTERIES

have this big expansion chamber. Remove the cap and at a glance you see the acid level. You can add water without spilling and you can get a hydrometer in far enough for an accurate reading.

The hard-paste, long-life, vibration-proof plates and more exclusive features that are making a host of friends for this battery are described in our new bulletin.

Write for a copy and prices.

Gould Storage Battery Co.

General Offices: 30 E. 42d St.
New York City

Works:
Depew, New York

Boston—14-16 Cambria St.
Philadelphia—613 Betz Bldg.
Cleveland—1761-5 E. 18th St.
Detroit—88 E. Congress St.

Chicago—225 E. 22nd St.
San Francisco—1448 Van Ness Ave.
Los Angeles—110 E. Pico St.

Agents in
Washington, Rochester, Buffalo, Pittsburgh, Milwaukee, Minneapolis, St. Louis, Kansas City, Omaha, Denver, Topeka, Seattle

CANADIAN REPRESENTATIVE:
R. E. T. Pringle, Toronto, Montreal, Winnipeg, Vancouver

Full stock of parts, plates and repairs carried by all offices and agents.

111



**Price
and
Quality
cannot be
separated; the
one maintains
the other.**

That is why Republics cost more than average tires—and why high-grade motorists gladly pay more to get them.

That is why Republic customers stick—and why men who buy "cheap" tires are constantly experimenting.

Sell—

REPUBLIC MILEAGE PLAIN AND STAGGARD TREAD TIRES

Republic
Staggard
Tread.
Pat. Sept.
15-22, 1908

—it's the best kind of business insurance you can get.

Write for the Republic proposition. Let us tell you more about Republic QUALITY.



REPUBLIC
WM TREAD TIRES

The Republic Rubber Co. YOUNGSTOWN, OHIO

Branches and Agencies in All the
Principal Cities

Here is the baby of the Republic family. He's a quality tire, too, made in three sizes, designed especially for small cars. His specifications:

| | |
|------------|---------------|
| 30x3..... | Price \$13.50 |
| 30x3½..... | " 18.00 |
| 32x3½..... | " 19.50 |

MAKE \$250.00 A MONTH Repairing AUTO MOBILE TIRES

Sounds like a lot of money
—IT IS—A WHOLE
LOT of MONEY to be earning
CLEAR every month—yet it's
what hundreds of men we have estab-
lished in the Automobile Tire Repair
Business are making. You let down the
DRAW BRIDGE for SUCCESS to enter into
your career by getting into business for your-
self. The business for you is the one where in-
vestment is small—the returns quick and for
cash—where the margin of profit is large—the
demand for your PRODUCT or SERVICE constant
and ever on the increase.

A HAYWOOD TIRE REPAIR EQUIPMENT

answers to all of these requirements of Old Dame Fortune—The certainty of success in this business is as sure as anything in this world can be—Each year adds thousands of new Automobile Owners—they need YOU to keep their tires in service.

Here Is Your Opportunity!

Be first to enter this new, big paying business in your town. Open your pockets. Let the dollars pour in. Act quick. Every auto sold means more tires to mend. Automobile business is growing fast—enormous field for tire repairing. Punctures and blowouts are common. Tires need retreading and vulcanizing. Something going wrong all the time. Thousands forced to buy new tires because they can't get old ones fixed. Think of the old bicycle days—repair shops on every corner—all making money—busy day and night. Autos make same proposition over again—only ten times bigger and better. Users of Haywood Tire Repair Plants are making big money. Johnson, Tex., writes: "I have made as high as \$18 in a day." Another man who bought a plant September, 1911, writes he has cleared over \$3000.00. That's going some! Operate a plant as side line in connection with auto business—garage or as an independent business. Find neighborhood where there's a bunch of autos—get all the steady business besides transient work. Experience unnecessary. You learn quick. Simply follow directions—practice a few days on a couple of old tires and you'll be ready to coin money. Business comes fast and easy.

Repair Tires At Home

Young men! and boys repair father's tires—get money he pays garage man. Get the neighbor's work. Make money to attend college or to start a garage and repair business.

Auto Owners—Repair your own tires—save money—pay for your outfit in short time. We have outfits for home use. Anyhow, investigate. Send today for catalogue. See the wonderful possibilities in this marvelous field. Learn of the enormous money-making opportunities in this fascinating new business.

Haywood Tire & Equipment Co.
720 N. Capital Ave., Indianapolis, Ind.

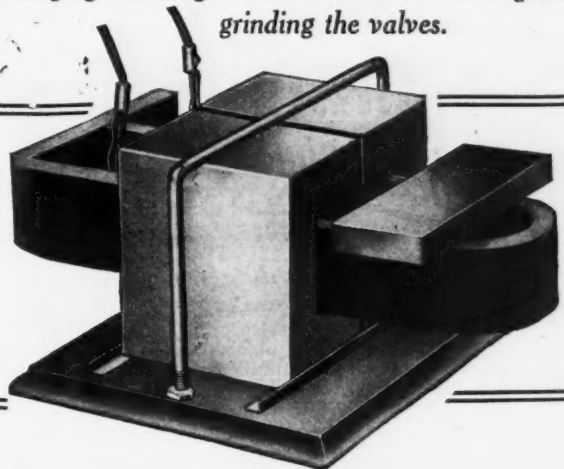
The New Money-Making Business
—Start Now—This Man Is Making Money

Business Keeps Coming



GARAGEMEN! Increase Your Profits with a • PEERLESS • MAGNET-CHARGER

Recharged magneto magnets make old magnetos as efficient as when new! Magneto magnets, to give best results, should be recharged every six months. 85 per cent of all magneto trouble is due to demagnetization of the magnets. *It is just as inconsistent when overhauling a car to neglect charging the magnets as it would be to neglect grinding the valves.*



Every car you overhaul, every customer you have, needs the services you can render with a **PEERLESS MAGNET CHARGER**. Add to your profits by getting the magnet charging business in your vicinity.

The Peerless is operated by an ordinary 6-volt storage battery or with common dry cells. But 15 to 30 seconds are required to thoroughly saturate a magnet to its full capacity. One charge from a 6-volt storage battery will charge from 150 to 300 magnets at a cost of less than one cent for electricity.

Anyone can operate the Peerless. The Peerless is practically fool proof and indestructible, as there are no exposed wires. Guaranteed to satisfactorily charge Magneto Magnets or your money back.

Get a Peerless working for you today. The greatest little rent payer ever invented. Avoid substitutes and infringements. Write for full particulars.

SAUERMANN MOTOR CO.

1516 Fourth Ave.,

Rock Island, Ill.

There's no Squeak in a Tuthill Spring

Perfect lubrication is merely a matter of frequent lubrication. It isn't a task to lubricate a Tuthill Titanic Spring—it can be done in a few minutes and without soiling the hands or clothes.

By loosening the axle clips slightly, the leaves open of their own accord—and the grease can be applied. This is the only effective way of lubricating and you have a silent, non-squeaking spring. No grease is wasted—it works over the entire friction area.

Greasing the spring for its entire life at one operation is impossible. The constant friction between the leaves causes an intense heat that quickly dries out the best lubricant—and makes it short-lived.

The ease of frequent lubrication is just one advantage of the



Guaranteed Absolutely Against Center Breakage

The steel used in Tuthill Titanics is the best. Two ANALYSES are made to see that the quality is kept up. During process of manufacture a series of rigid tests by man and machine, prove that the Titanic has strength it never will be called upon to use.

A Tuthill Titanic is guaranteed unreservedly against breakage at the center—where 75% of all springs break. This is in addition to the regular guarantee that goes with all Tuthill Springs.

Tuthill Special Repair Service

While the Tuthill Titanic is unbreakable, at the same time we maintain a large Service Department for the prompt repairing of springs of other makes which do break. We are ready to express a Tuthill Spring for practically any make of car at a moment's notice. We keep a full stock. Thus can the car owner be assured of getting an unbreakable spring in place of the broken one in quick time. The Tuthill Spring costs no more than other springs of the same high quality—the dealer's profit is larger—the customer is always satisfied—and will come back with other work.

The Tuthill Unbreakable Spring is the result of thirty-four years' experience in spring making. To put a Tuthill Spring on a car ends spring breakage. Specify The Tuthill Titanic.

TUTHILL SPRING CO.

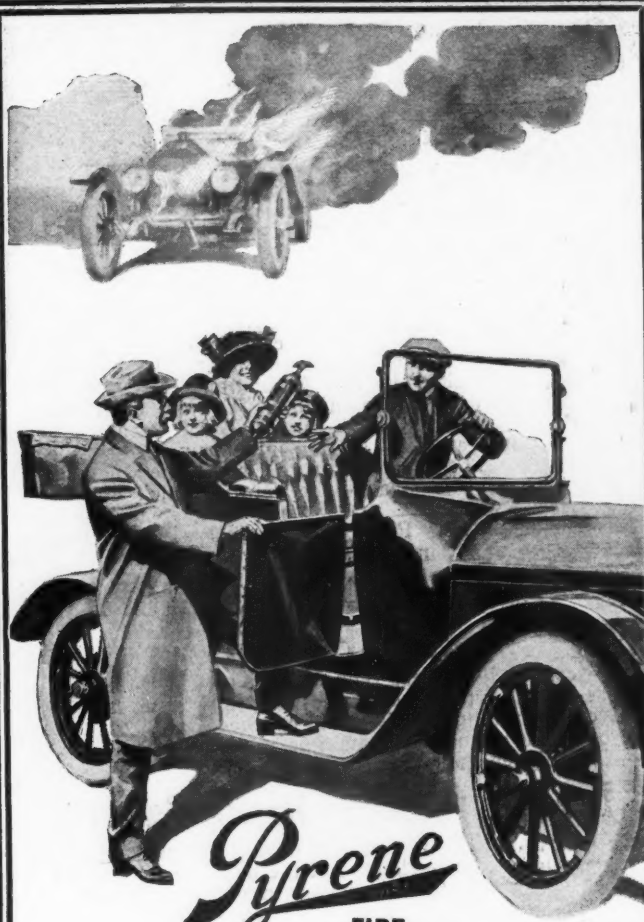
762 Polk Street

Chicago

1728

Tuthill Titanics are guaranteed not to break at center

Strongest at center where the greatest strain comes



Pyrene
FIRE EXTINGUISHER,

**15% Reduction
In Your**

**Insurance Premium
and PROTECTION**

From the Dangers and Annoyances of Fires on the Road if your car is Pyrene-Equipped

Q Your new car will be Pyrene-equipped at the factory if you demand it.

All leading Insurance Companies allow 15% reduction on the Fire Insurance Premiums of Pyrene-equipped motor cars, which reduction was originated by The Aetna Accident and Liability Co. and The Automobile Insurance Co. of Hartford, Conn.

Collisions happen and the overturning of an auto is not infrequent and fires follow, threatening the lives of passengers unable to extricate themselves. The Pyrene Fire Extinguisher accessibly located may be the means of saving the lives of your companions.

Ask that your new car be Pyrene-equipped at the factory.

AT ALL FIRST CLASS SUPPLY DEALERS

Brass and Nickel-plated Pyrene Fire Extinguishers are included in the lists of Approved Fire Appliances issued by the National Board of Fire Underwriters, examined and labeled under the direction of the Underwriters Laboratories.

Pyrene Manufacturing Co., 1358 Broadway, New York
Offices in all principal cities

And Now Chalmers

have adopted GABRIEL SNUBBERS as standard factory equipment. Many other high grade cars, including White, Peerless, Stearns-Knight, Oldsmobile and Lozier use GABRIEL SNUBBERS as factory standard; and over twenty other leaders as partial or special equipment.

GABRIEL SNUBBERS

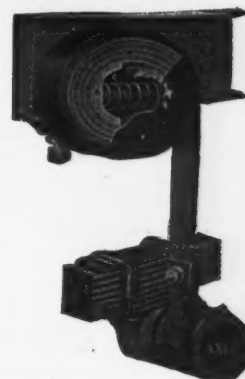
Make Your Car Ride Easy and Last Longer

Ask the Engineering Department of *YOUR* car about Snubbers; they have tested them and know their merits.

The 1914 sale of Snubbers has *more than tripled* last year's high record. GABRIEL SNUBBERS lead all other devices in volume of production, just as they have always led in efficiency.

GABRIEL HORN MANUFACTURING COMPANY

1415 EAST 40th STREET, CLEVELAND, OHIO



What About Heating Your Garage This Winter?

Have you prepared your garage for winter or are you now facing the problem of cold weather vandalism to your car?

Scientific Safety Garage Heater

By using the Scientific Safety Garage Heater you may drive your car all winter with the same comfort as in summer. Starting trouble is positively eliminated and there is no danger of freezing the radiator or cracking a water jacket.

The heater saves its cost many times in the elimination of car deterioration.

The only approved heater made especially for a garage. Used and recommended by thousands of enthusiastic motorists throughout the United States and Canada. Its principle is the same as the miner's safety lamp, now in use by the government. Gasoline fumes positively cannot ignite or explode.

Insurance officials, after exhaustive tests, pronounce the heater absolutely safe. Fire marshals permit its use.

Consumes either artificial or natural gas at a small daily cost. It is simple and inexpensive to install and needs no attention when once started.

The No. 700 size, price, freight prepaid, \$25.00, heats an ordinary two-machine garage from freezing to 60° in a short time.

To facilitate delivery order at once from your nearest dealer or write direct for instructive free booklet, "Scientific Garage Heating." Give the approximate size of garage.



The Scientific Heater Company

Factory and Executive Offices

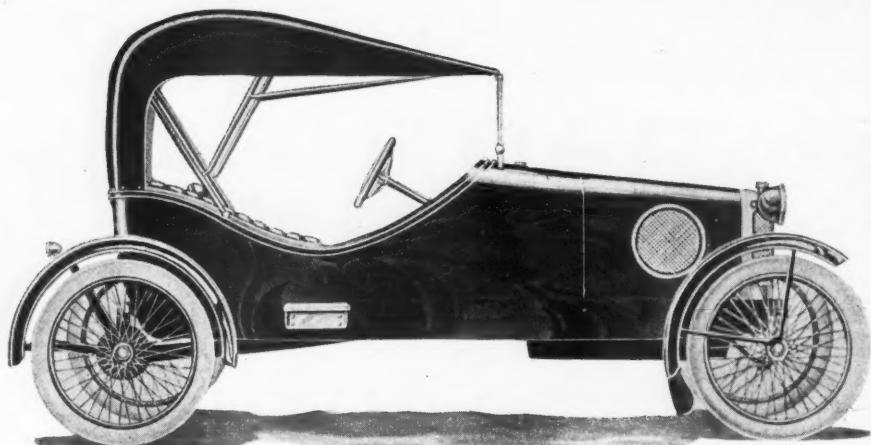
1400 POWER AVENUE, CLEVELAND, OHIO

Distributors in
Principal Cities

THE 1915 DUDLY

\$385

F. O. B.
FACTORY



\$385

F. O. B.
FACTORY

THE LIGHT CAR YOU HAVE WAITED FOR

UNIT POWER PLANT.
4 CYL.—2 $\frac{3}{4}$ "x4 MOTOR.
THERMO SYPHON SYSTEM.
DRY PLATE CLUTCH.

SLIDING GEAR TRANSMISSION.
ATWATER KENT IGNITION SYSTEM.
SHAFT DRIVE.
100" WHEELBASE—40" TREAD.

ELECTRIC LIGHTS.
750 LBS. ACTUAL WEIGHT.
28x3 NON-SKID TIRES.
40 MILES PER GAL. GASOLINE.

IMMEDIATE DELIVERIES

The Dudley Tool Company, Menominee, Michigan

BALL BEARING FACTS

Automobile manufacturers who have been using foreign makes of ball bearings need not worry over the war.



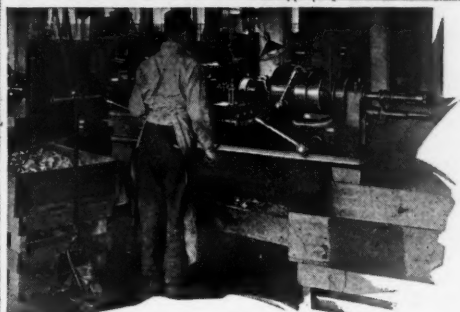
2,000 men, Skilled in Manufacturing Ball Bearings, Are at Your Command.
WORKS OF THE NEW DEPARTURE MANUFACTURING COMPANY

The New Departure plant is producing between ten and twelve thousand bearings per day and this is not its maximum capacity. We can guarantee your specified deliveries not only now, but for any length of time in the future. We can also guarantee the quality of New Departure bearings to be the equal of any.

We solicit an opportunity to demonstrate to you our ability to completely meet your requirements *now*.

The New Departure Manufacturing Company, Bristol, Conn.
WESTERN BRANCH, 1016-17 FORD BUILDING, DETROIT, MICHIGAN

When Writing to Advertisers, Please Mention Motor Age.



JUST as Zenith methods are efficient so is the final product.

With no valves, or cams, or adjustments—no moving parts to possibly give trouble—the Zenith is supreme in its simplicity and precision. Learn more about the Zenith idea. Send for a catalog.

Where Motion Study Saves Time

COST must be considered after Zenith quality is assured. Time is money, and to save it cuts the cost for buyer and user. This is the province of motion study.

The Zenith workman pictured above is efficient. On one side within easy reach is the raw material; on the other, the receptacle for the finished operation. Wheel trucks give quick movement. No time lost here—no waste. The Zenith represents full value—one hundred cents on the dollar of quality.



ZENITH CARBURETOR CO. DETROIT, MICH.



Are You Going to Pump Up Tires By Hand Another Year?

Buy a KELLOGG Pump or buy a car that has or can be equipped with a KELLOGG.



Not a candidate for re-election

This list shows your choice of cars with a Kellogg as Standard or Special Equipment:

CHANDLER
FIAT
FRANKLIN
HAVERS
HOWARD
CHALMERS

IMPERIAL
JACKSON
LEXINGTON
LOZIER
MITCHELL

PACKARD
PEERLESS
SPEEDWELL
STEARNS
STEVENS-DURYEA
WINTON

ABBOTT
BUICK
CADILLAC
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COLE

HENDERSON
HUDSON
MAXWELL 6
OAKLAND
OVERLAND

PIERCE
REO
SIMPLEX
STUDEBAKER
STUTZ
AND MANY OTHERS

The Value of Kellogg Attachments

The big advantage of the Kellogg Pump on your car is due to the fact that we furnish special attachments for each particular car.

Dealers—

You do not have to work hard to sell a Kellogg Pump for any car.

**Engine Driven
KELLOGG
Air Pump**

One, Two, Four, Six Cylinder Models

KELLOGG MANUFACTURING CO., 114 Circle St., Rochester, N. Y.

New York

San Francisco

Detroit

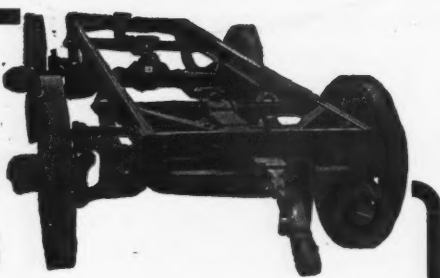
Chicago

SPECIAL PUMPS AND AIR-STARTING UNITS
Send for 1915 Ford Starter Literature

Owners—

Write for descriptive folder. Give name and model of your car.

TROY Trailers



Make the Motor Truck Pay Big

On short hauls, Troy Trailers eliminate the time lost in loading and unloading.

On long hauls, you deliver at least twice as much material per trip—often much more.

TROYS are reversible, track absolutely, can be backed around any corner, can't hurt the motor.

Bulletin MAT gives the full details. Write for it.

THE
TROY WAGON WORKS CO.
GURNSEY ST., TROY, MIAMI CO., OHIO



WESTON Model 301

Ammeters

for the
Cowl

or

Dashboard



are specially built with a full knowledge of the exacting requirements of automobile service. They are designed for continuous reliability and like all other Weston Models, are constructed with the most conscientious regard for the service for which they are intended.

Their serviceability, accuracy, and durability is vastly superior to that of any other small instrument and, in fact, their merits are so radical as to place them in a class which is distinctly their own. We should be glad to prove these statements upon request.

There is no better insurance for the automobile, or starting and lighting equipment manufacturers, against dissatisfied owners or expensive claims, than to use Weston Model 301.

It is an extremely high grade yet surprisingly inexpensive instrument.

For information address,

Weston Electrical Instrument Co., Newark, N. J.

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| New York | Boston | San Francisco | Atlanta | Berlin and |
| Chicago | St. Louis | Detroit | Richmond | London |
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"New Ignition for Old"

is a feature of SPLITDORF BRANCH HOUSES. We have an exchange proposition of the greatest interest to every owner of a gasoline motor who would save time and money. You can exchange ANY MAKE of magneto or, in fact, any ignition system throughout with us—low tension, dual, self-contained high tension systems, and coils and transformers—and save real money with our up-to-the-minute equipment.

Write or Call for "Exchange Details"

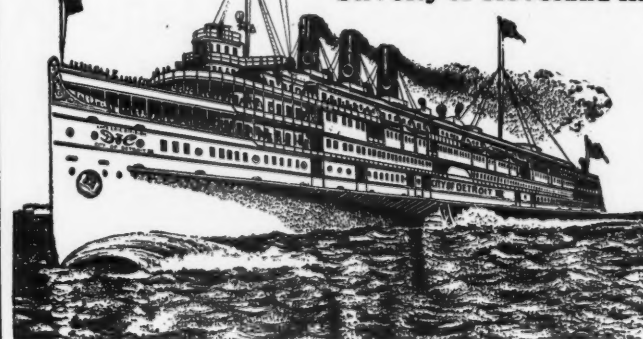
SPLITDORF ELECTRICAL COMPANY

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| ATLANTA | 10-12 E. Harris St. | LOS ANGELES | 1215 S. Hope St. |
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Operating between
Detroit and
Buffalo

"Two GIANTS of the Great Lakes"

Str. City of Detroit III
Str. City of Cleveland III



The Delights of a Lake Trip

REST after work is necessary to human endurance, and holidays are a wise economy. The Great Lakes of America offer more vacation opportunities than any other source in the country. The steamers of the Detroit and Cleveland Navigation Company operating to all important ports are unrivalled in point of elegance, comfort and quality of service—the perfect freedom offered by the saloon and promenade decks, the commodious state rooms, luxurious furnishings and excellence of cuisine make life aboard these floating palaces a solace to the weary mind and body.

Where You Can Go

Daily service is operated between Detroit and Buffalo, Detroit and Cleveland; four trips weekly between Toledo, Detroit and Mackinac Island, the historic summer resort of the North Country; and from June 25 to Sept. 10 a special steamer, two trips weekly, will be in commission between Cleveland and Mackinac Island, stopping only at Detroit every trip. During July and August special daylight trips between Detroit and Cleveland. From June 10 to Sept. 10—daily service between Toledo and Put-In-Bay.

Railroad Tickets Available

Tickets reading via any rail line between Detroit and Buffalo, Detroit and Cleveland will be honored for transportation on D. & C. Line Steamers in either direction. Send 2 cent stamp for illustrated pamphlet and Great Lakes Map. Address L. G. Lewis, G. P. A., Detroit, Mich.

DETROIT & CLEVELAND NAVIGATION CO.

Philip H. McMillan, Pres. A. A. Schantz, Vice-Pres. and Gen. Mgr.
General Offices, Detroit, Mich.
Steamers arrive and depart from Third Avenue Wharf, Detroit.

REPUBLIC FOR SERVICE

Republic Motor Trucks

THE RECOGNIZED (1-ton) Motor (\$1350) Chassis
STANDARD (1 1/2-ton) Truck (\$1475)
THE HONEST TRUCK AT AN HONEST PRICE

The dealer's asset

Price Reliability Popularity

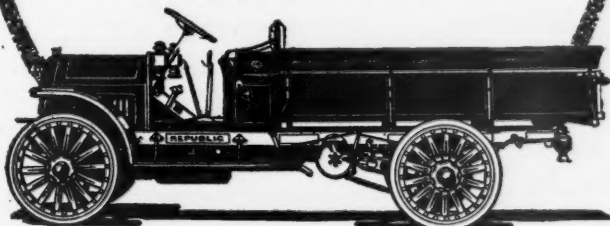
The Vitals of the Republic

Continental Motor. Russell Full Floating Jack Shaft.
Timken Axles. Covert Transmission.
Bosch Magneto. Standard Cone Clutch.
Stromberg Carburetor. Firestone Tires.

NO BETTER UNITS BUILT

We want the opportunity to prove our statements.
Wire or write for complete information.

REPUBLIC MOTOR TRUCK CO., Alma, Mich.
(Formerly Alma Motor Truck Co.)



"Whitney" Keys for Ford Cars

In order to supply the demand for "Whitney" Keys for Ford cars we are now prepared to furnish a box containing 12 keys especially assorted for these cars.

Each box contains a circular describing each key, giving size and where used. Every garage and repairman should have a box of these keys on hand. They cost little and are very convenient.

The Whitney Mfg. Co.
Hartford, Conn.



**The Dealer
Holds
This Up
Because It
Upholds
Him**

**He Safely Recommends It
Because of This Trade Mark**



ROAD SMOOTHER

Reg. U. S. Pat. Off.

Quickly applied to your Ford Car

¶ Even if the dealer did not know that on tens of thousands of Ford cars these Road Smoothers render the best and longest comfort, he would stake his reputation upon it just because it is a K-W. This mark of quality means reliability without a doubt, otherwise it would not be a K-W.

¶ Tell your dealer to put a set on your car today, then, and only then, will you realize how K-W Road Smoothers smooth out the roughest roads.

¶ What you demand first is comfort. The reasons you get it are—the helical spring that takes up shock; the air chamber that checks rebound; and the anti-side-motion links that prevent side rocking and the chassis from getting out of alignment.

¶ Next, you demand that this comfort be reliable and lasting. The reasons it is permanent are also K-W reasons—high grade heat-treated drop forgings; electric smelted chrome vanadium steel springs (not ordinary spring steel); extra heavy phosphor bronze bushings, and all thoroughly tested and perfectly built.

¶ Beware of imitations. The K-W is the only Road Smoother. K-W Road Smoothers are sold by dealers who know the difference, everywhere, at one price.

\$25 set of four
one for each wheel

If your dealer cannot supply you sent direct on receipt of price. Write for booklet "Taking Out the Bumps."

HEADLIGHTING
OUTFITS

THE K-W IGNITION CO.
2835 CLEVELAND AVE.
CLEVELAND, OHIO, U.S.A.

SPARK COILS
SPARK PLUGS

Is your top leaking?

No doubt it is—most of them do. It is the bugbear of the canvas and mohair tops, but there is no need to worry along with it or experiment with so-called waterproofings when \$2.00 will buy a 3-qt. can (enough for any top) of Coleman's (pat'd) "Hippo" Waterproof Filler that is guaranteed to absolutely waterproof your top and lengthen its life.

"Hippo" is not a coating but is a preservative, waterproofing preparation that penetrates every fibre of the fabric to which it is applied.

Coleman's (pat'd) "Hippo" Waterproof Filler contains no oil, is not injurious to fabric or hands, does not stain, stiffen, crack or change the color of the top, and is easily applied. If you are skeptical, write Dept. A for folder and nearest agent's name.

Dealers will find this a big proposition.

THE AMERICAN CHEMICAL & MFG. CO., INC.
NEW YORK, N. Y.

"Hook On This Autowline I'll Pull You Out"



BASLINE AUTOWLINE

is the motorist's sure reliance in getting out of road difficulties. A car in a ditch, or a "dead" engine at the foot of a hill, doesn't trouble this little, pliant, 25-foot puller!

Basline Autowline

"The Little Steel Rope With The Big Pull"

has the flexibility, toughness and staying qualities of the world's most famous steel wire rope—"YELLOW STRAND POWERSTEEL." It will take a 4000-lb. car up a 20% rise without a quiver. It's always ready to take a tow or give one. Neat, compact, easy to carry and easy to use—motorists are finding Basline Autowline the one necessary they can't afford to forget. Sold by all dealers everywhere. East of the Rocky Mountains, \$3.95. Ask about it today.



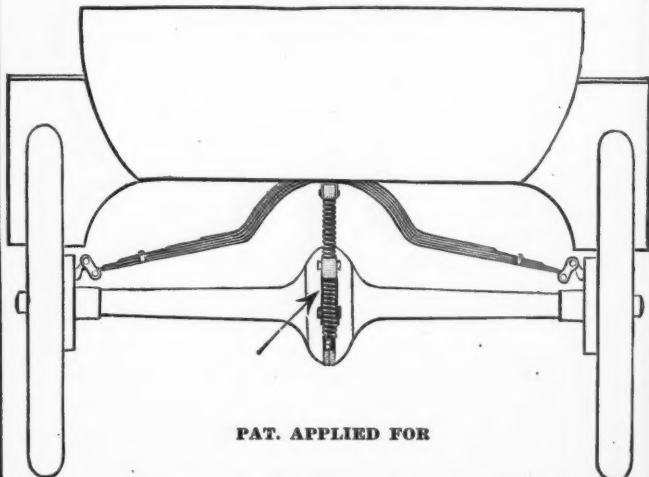
FREE An illustrated circular giving all needful Autowline information

Broderick & Bascom Rope Co.

813 N. Second St. St. Louis, Mo.

New York Office, 76 E. Warren St.
Manufacturers of famous Yellow Strand Powersteel Wire Rope that helped build the new Municipal Building, New York.

EMPRESS SHOCK ABSORBER FOR FORD CARS



PAT. APPLIED FOR

This device checks the ordinary road shocks and regulates the rebound action of the springs. It also steadies the car body, largely eliminating side sway.

Can be attached in ten minutes. No jacking up of car necessary.

The Absorber is carefully made from the best materials and nicely finished in black hard rubber finish.

Price \$5.00 Each

BOWEN MANUFACTURING CO.

Auburn, N. Y.

ADDRESS DEPT. B

"WARNER GEARS—STANDARD FOR YEARS"

"It's an absolute impossibility to 'open up' a plant and immediately deliver efficient gear assemblies.

"It takes time and experience—especially experience—to enable a concern to ship really dependable parts.

"This is an undisputable fact, no matter what the business happens to be.

"We are surely capable, in lieu of these facts, as for thirteen years we have been manufacturing automobile gear parts for the most successful and best known motor car manufacturers in the country.

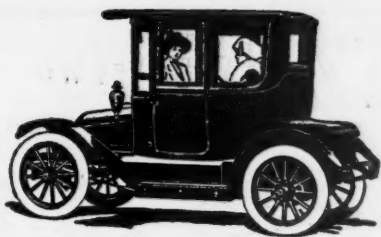
"And listen, what is more, we've been pleasing them in every particular.

"Is there any better proof of a product's merit than one hundred per cent of satisfied customers?

"Looks as if we ought to be able to please you too."

WARNER GEAR CO. MUNCIE-IND.

DETROIT OFFICE—628 FORD B'L'D'G.



Buffalo Electric

"The car you always admire"

SERVING a distinct need, Buffalo Electric stand alone as the town car. Their claim to the place they occupy is based upon exclusive features—three point motor suspension—direct drive—noiseless running and the wonderfully simple foot control.

That's only a few points. Our catalogue explains others. Send us your name—today.

Special inducements in localities where we are not represented.

BUFFALO ELECTRIC VEHICLE COMPANY

Successors to Babcock Electric Carriage Co.
1219 Main Street Buffalo, N. Y.

HERZ PLUG

BOUGIE HERZ MERCEDES

GUARANTEED ONE YEAR

DOUBLE STONE Insulation. PLATINUM-ALLOY Electrodes. FOUR SPARKING POINTS. SELF CLEANING. Price, \$1.50. Order from your dealer or
HERZ & CO., 245 W. 55th St. (Nr. Broadway), New York

The Hollenden Cleveland

J. H. THOMPSON ••••• MANAGER

EUROPEAN PLAN

800 ROOMS

The Leading Hotel of America's "Sixth City"

Home of the Cleveland Automobile Club

Make Your Ford Car Ride Easier

Add the pleasures and comforts of *easy riding* to the dependability of your Ford car. Don't let "car fatigue" caused by rough roads spoil a day's motoring enjoyment. Equip your Ford car with—

BUCKEYE DE LUXE SHOCK ABSORBERS

They knock the shock—give perfect results on any road, under any load. Constructed of best materials obtainable, including drop forgings, Bronze Rocker plates and Bronze bushings. Unlike other shock absorbers, they never sway when taking sharp curves. However rough the road, the downward motion on their spiral springs is **always at right angles**. Can be attached in one hour by any Ford owner.

Price, per set of 4, \$15.00. Per set of 2, \$8.00. In ordering specify whether for Touring Car or Roadster.

Order through your dealer or sent direct prepaid on receipt of remittance. Absolutely guaranteed.

Dealers and Jobbers Wanted Everywhere

MANUFACTURED BY
THE CENTRAL BRASS & FIXTURE CO., Springfield, Ohio

Takes the Jar Out of the Ford Car

SHALER \$350

Safety Vul-Kit

Vulcanizer

Save Tires—Saves Repair Bills

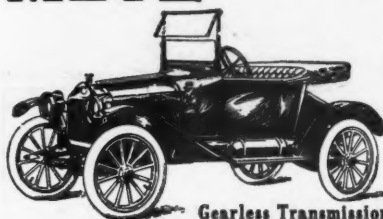
Repairs punctures, blow-outs and cuts in casings or tubes, perfectly—makes repair strongest part of tire. No watching, no regulating, automatic in operation. Impossible to under-cure or overcure. Has no open flame—no danger if accidentally upset. Anybody can use it. Furnished complete at \$3.50 with all repair material. Investigate.

Send for Book "Care and Repair of Tires"—its free.

C. A. SHALER CO. 235 Fourth St.—Waupun, Wis.

METZ "Twenty-Two" Roadster

WINNER OF THE
GLIDDEN TOUR



\$495

Equipped Complete

Gearless Transmission

Fore-door body, extra thick tufted upholstery, plate glass rain-vision wind shield, left-hand drive with center control, 4-cylinder, 23½ H.P. water-cooled motor, Bosch magneto, Frost-O-Lite tank, extension for full elliptic springs, artillery wheels, best quality Goodrich clincher tires, 5 lamps, horn, pump, jack, tools. Speed, 50 miles per hour. Beats 'em all at climbing hills. Secure EXCLUSIVE SALE in your territory. Write for terms and Catalog "K."

METZ COMPANY

WALTHAM, MASS., U. S. A.

Wisconsin

CONSISTENT

MOTORS

Dependability

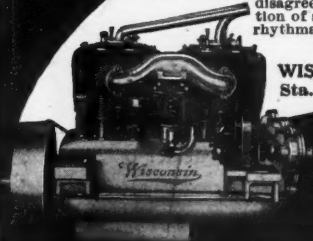
After all it is the motor that keeps on going that makes automobiles and motor trucks a success. Wisconsin Motors, both the auto type and the truck type, have proven that they are

ABSOLUTELY CONSISTENT

You can always rely upon them. You can always be sure that you will keep on going. When you hear one running—and they operate so quietly that it's hard to hear them! you never hear that disagreeable "thump" which accompanies the operation of so many motors—you hear nothing but the rhythmic purr of a perfectly constructed motor.

Complete catalog upon request

WISCONSIN MOTOR MFG. COMPANY
Sta. A—D-47 Milwaukee, Wis.



MORE MILES —LESS GAS

See our
announcement
this publication
Sept. 10th
Issue

Laidlaw

BURBANK

MOTOR CLOTH

The Laidlaw Company, Inc.

126-132 West 46th Street

New York

Master Carbureter

*In Design 'Tis the Newest
Its Parts Are the Fewest*

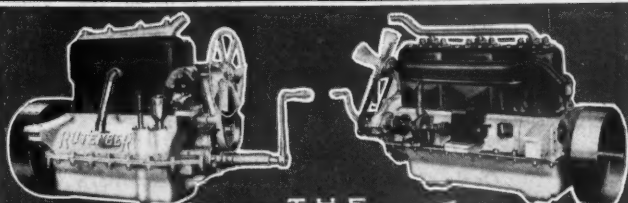
LARGE PRODUCTION IN DETROIT

Now Every Motorist Can Have

A MASTER

QUICK ACTION

Address Dept. J, General Offices
MASTER CARBURETER CORPORATION
944 Woodward Ave., Detroit



THE RUTEMBER MOTOR

possesses the virtue of economy in first cost and in subsequent up-keep, revealing the merit of sterling quality in every detail of construction and renders as consistent and efficient service as motors costing twice as much to buy and maintain.

THE RUTEMBER MOTOR CO., MARION, INDIANA

Spicer Universal Joints



Universally Accepted as the Most Dependable Flexible
Connection Known to Motor Car Practice

Oil-Tight PARTS INTERCHANGEABLE Dust-Proof
SPICER MANUFACTURING COMPANY, Plainfield, N. J.

Sales Representatives:

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Foreign: Benjamin Whittaker, 21 State Street, New York

MERCER

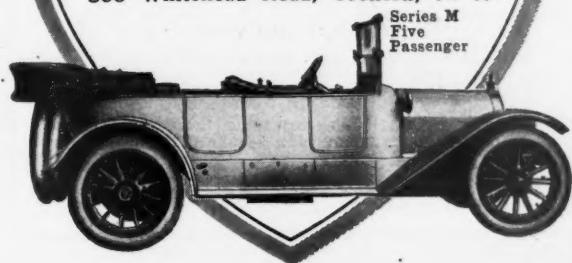
FURTHER proof of the high efficiency and pronounced enduring qualities of Mercer cars, was given in the Elgin National road race, August 22nd.

A 300 cubic inch Mercer, driven by Pullen, finished second, only a minute behind the winning Mercedes, and averaged 73 miles an hour. This Mercer established a new world's non-stop racing record, making no stop of any kind whatsoever from start to finish of the 301-mile race. Following the race, the car was driven over the road from Elgin to the Mercer factory at Trenton, N. J.

Live dealers appreciate what such a performance means. Write for details regarding open territory.

Mercer Automobile Co.

800 Whitehead Road, Trenton, N. J.



HOUK Detachable WIRE WHEELS

The wheel that makes any car modern

Houk Mfg. Company 1702 Elmwood Avenue, Buffalo, N. Y.

For George W. Houk Co. (Licensed Under Rudge-Whitworth)

THE NEW WAHL

\$890

Completely Equipped

We desire additional dealers where we do not have representation at the present time. A demonstration is a sure sale. Our policy is a liberal one. Our contract with dealers is for three years. Write or telegraph today—tomorrow may be too late.

WAHL MOTOR COMPANY
Dept. 18 Detroit, Mich.

When Writing to Advertisers, Please Mention Motor Age.

KOEHLER
KOEHLER ONE TON TRUCK \$750
K

GREATEST VALUE AT THE PRICE • LOWEST PRICE • CAPACITY

TEN BODY TYPES

KOEHLER

\$750

ONE TON TRUCK

ONE TON TRUCK
ONE TON TRUCK

Here are brief specifications: Motor, 24 H.P., water cooled, 4 cycle; Ignition, high tension magneto. Tires, 36 in. solid std. removable, also non-skid demountable pneumatic tires optional at extra price. Tread, 58 in. Axles, 2 in. sq. rear, 1 1/2 in. front. Transmission, proved right, by years of use, runs in oil bath.

SEND FOR CATALOGUE

DEALERS How about your city or town—is it Koehlerized, or waiting for someone to reap a harvest from sales? Will it be you, or one of your competitors who will make it hard for anyone else to sell any other make of truck? The Koehler is a great money-maker for dealers, being the lowest priced ton truck and giving greatest value at any price.

OUR TRAVELING REPRESENTATIVES ARE NOW COVERING THE ENTIRE COUNTRY and each has a truck with him. Notify us at once if you are interested as a representative may now be in your section. You do not want to miss a chance to see this truck.

Our complete catalog and selling plan should be in your hands—send for these.

H.J. KOEHLER S. G. CO., 1709 Broadway, New York

K
KOEHLER ONE TON TRUCK \$750
K

Standard Sedan for T. Model Ford Cars

Added "Class" for the Popular Ford

can now be found in the tremendously attractive and serviceable ROBBINS Ford Sedan pictured above. This special body is large, roomy, comfortable. It is richly appointed, strongly and stylishly made. It seats five passengers without crowding and transforms any Standard Ford Touring Car into a practical, year 'round car at very little expense. The

ROBBINS Ford LINE

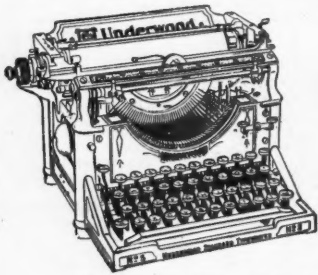
of Standardized Bodies for Ford Cars

includes several of the most attractive designs that it is possible to produce. They offer opportunities of converting the popular Ford Roadster or Touring Car into a closed body car that are most unusual. The cost is low—the value many times greater than the price. If you feel that your Ford cannot give you the protection and service during the winter months that you demand—write today for particulars regarding the ROBBINS Ford line.

Progressive dealers who act quickly can still arrange to secure the ROBBINS Ford Agency. Write for full particulars regarding our Agency Proposition.

IRVIN ROBBINS & COMPANY
10th St. and Canal, Indianapolis, U. S. A.

The UNDERWOOD



and the
UNDERWOOD
alone typifies
**Typewriter
Supremacy**

PROVED BY ALL WORLD'S RECORDS
"The Machine You Will Eventually Buy"



Established Agents,
Solicited

Braender Tires & Tubes

SERVICE and SATISFACTION

The Only set of Tires to complete the entire 500-mile race at Indianapolis, May 30, 1913. Consider that 88 Tires of other makes were changed in this Race. Our "Victory Folder" explains other races.

Braender Rubber & Tire Co.

Main Office & Factory **Rutherford, N. J.**
New York, 1937 B'way. Chicago, The Alfredal Co. Boston, Dayton Tire Co. Pittsburgh, Keystone Motor Supply Co. Indianapolis, Brant Bros. Columbus, O., Franklin Rubber Co. Troy, N. Y., G. H. Snyder. Newark, N. J., Ketcham & Lawrie.

UNIVERSAL VULCANIZER

Tire Cuts Ruin Casings
They admit moisture to the carcass, cause the fabric to rot and weaken, grow larger—end in blowouts. You can repair casings and inner tubes anywhere in 15 minutes, good as a repair shop can do—and for one cent.

A Practical Vulcanizing Outfit Complete, with enough repair gum to make thirty patches. Weighs 3 pounds, can be carried in tool box.

Price complete, \$3.50
Ready for Instant Use. At your dealers, or we will send it prepaid. Guaranteed satisfactory or money refunded.

ADAMSON MFG. CO.,



Patented April 2, 1912, April 1, 1913
East Palestine, Ohio

| | |
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| Touring Car..... | \$490 |
| Roadster | 440 |
| Town Car | 690 |

For further particulars regarding these low prices and profit sharing plan see Ford Branch.

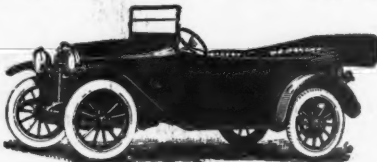
FORD MOTOR COMPANY
Detroit, Michigan

The *Detroit* — \$1050

With Westinghouse
Starting and
Lighting System

FIRST

Pure
European
Streamline
in This
Country



FIRST

Long-
Stroke
Ball-
Bearing
Motor

Full Floating Rear Axle, Platform Rear Spring Suspension, All Recording Instruments in One Unit, Red Electric Flash Oil Gauge, Carburetor Above Frame, 112 Inch Wheel Base, Left Hand Drive, Center One-Lever Control, Multiple Disc Clutch in Oil, Less than 2300 Pounds, 32 H. P.

Briggs-Detroit Co., 455 Holbrook Ave., Detroit, Mich.

Write for Catalog and Proposition

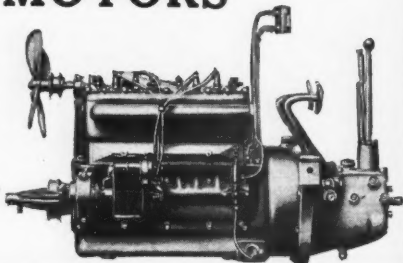
Light Car Self Starter

GBS MOTORS

Gearless
Balanced
Silent

THIS latest addition to the GBS motor family is Model D, 4 cyl., 3 1/4" x 4 1/4", en bloc, detachable cyl. head, extra large bearings, unit power plant, 3 pt. support. Electric self starter if desired. High grade throughout. Write for details.

Golden, Belknap
and Schwartz Co.
Detroit, Mich.



SAFETY

When you buy

Goodrich Safety Tires

Best in the
Long Run

FIRST

Corcoran Lamps

GAS, OIL, AND ELECTRIC
CORCORAN LAMP CO.
CINCINNATI, O.

Searchlight Gas

the most economical and dependable lighting system on the market.

Full details mailed to you on request.

THE SEARCHLIGHT CO.

General Office, 1016 Karpen Bldg.
CHICAGO, ILL.

WINTON SIX

A Rare Beauty

The 1915 Model 21 Winton Six is equipped with everything worth while, including electric starter, if you want it. And, best of all, a car of rare and exceptional beauty—the kind of beauty that impels people in the street to turn for a second longing look. Send for 64-page catalog.

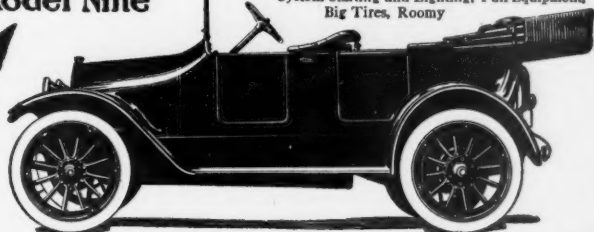
THE WINTON MOTOR CAR COMPANY
424 Berea Road, Cleveland, Ohio
World's First Maker of Sixes Exclusively

Cartercar

Model Nine

The New Gearless Transmission Cartercar for 1915

Driven by "Wheel and Disk"—with 12 years of success behind it. New Streamline Body. Delco Electric System Starting and Lighting. Full Equipment. Big Tires. Roomy



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Write for our proposition and "The Transmission Tells the Story"

Cartercar Company Pontiac Michigan

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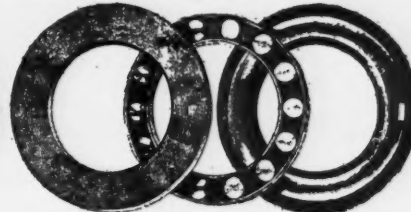
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 With complete equipment and electrical system
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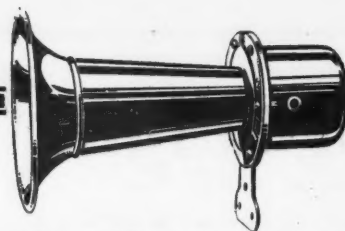
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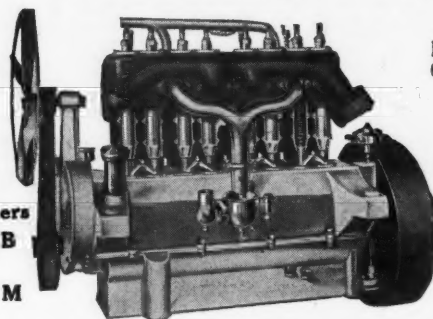
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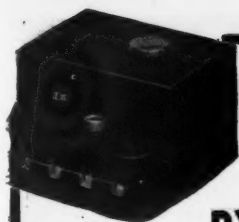
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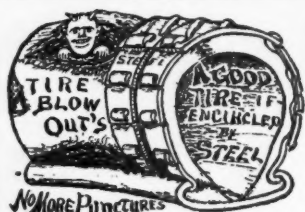
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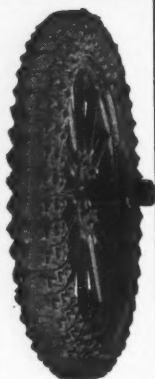


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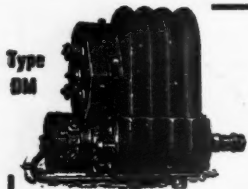


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See that your car is equipped with the

Atwater Kent Ignition System

It will be an easier car to start and a better car to drive.

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"Bridgeport"

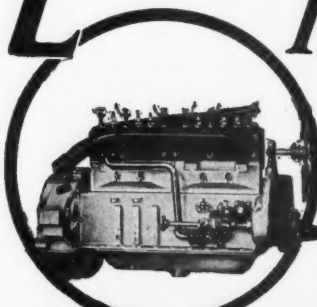
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Grinder, an attachment for a lathe that will grind automobile cylinders round and straight. Particulars on request.
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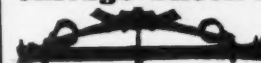
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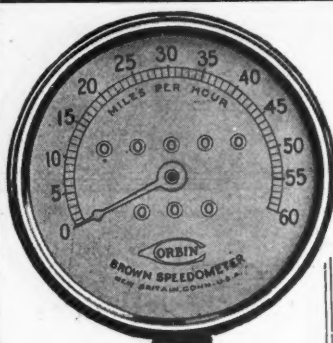
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Index to the

A

Adamson Mfg. Co..... 86
American Chemical & Mfg.
Co. 82
Atwater-Kent Mfg. Works 90
Automatic Appliance Co... 60

E

Eisemann Magneto Co.... 62
Electric Auto-Lite Co..... 89
Empire Automobile Co.... 46

F

Federal Rubber Mfg. Co... 88
Firestone Tire & Rubber
Co. 90
Ford Motor Co..... 86

B

Bosch Magneto Co..... 3
Bowen Mfg. Co..... 82
Braender Rubber & Tire
Co. 86
Brennan Motor Mfg. Co... 88
Brietson Mfg. Co..... 69
Bridgeport Brass Co..... 90
Briggs-Detroit Co..... 86
Broderick & Bascom Rope
Co. 82
Buffalo Electric Veh. Co... 83
Byrne, Kingston & Co.... 88

G

Gabriel Horn Mfg. Co.... 77
Garford Mfg. Co..... 88
General Electric Co..... 72
Gilbert Mfg. Co..... 99
Golden, Belknap & Swartz
Co. 86
Goodrich, B. F., Co..... 86
Goodyear Tire & Rubber
Co. 54
Gould Storage Battery Co.. 74

C

Cartecar Co..... 87
Central Brass & Fixture Co. 83
Chalmers Motor Co..... 61
Chicago Automobile Supply
House 97
Classified 97
Clearing House.....91-96
Connecticut Tel. & Elec.
Co. 88
Continental Motor Mfg.
Co. 90
Corbin-Brown Speedometer 98
Corcoran Lamp Co..... 86
Cox Brass Mfg. Co..... 88
Cullman Wheel Co..... 96

H

Hartford Suspension Co.... 1
Haywood Tire & Equip-
ment Co..... 75
Heinze Elec. Co..... 90
Herff-Brooks Corp. 68
Herz & Co..... 83
Hollenden Hotel..... 83
Holley Bros Co..... 43
Houk Mfg. Co..... 85
Hoyt Electrical Instrument
Works 97
Hupp Motor Car Co..... 88
Hyatt Roller Bearing Co.. 70

I

Inter-State Motor Co..... 90

D

Dayton Rubber Mfg. Co... 88
Denby Motor Truck Co...48-49
Detroit Steel Products Co.. 90
Detroit & Cleveland Navi-
gation Co..... 80
Dodge Bros..... 63
Dudley Tool Co..... 78
Duff Mfg. Co.....Cover

J

Jeffery, Thos. B., Co....50-51

K

K-W Ignition Co..... 81
Kellogg Mfg. Co..... 79



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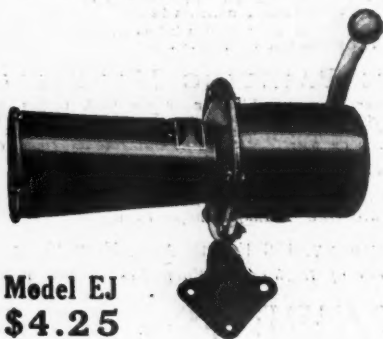
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And remember that there will be just as many cars sold this year with the same inefficient bulb horn—400,000.

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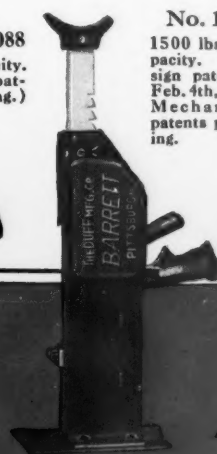
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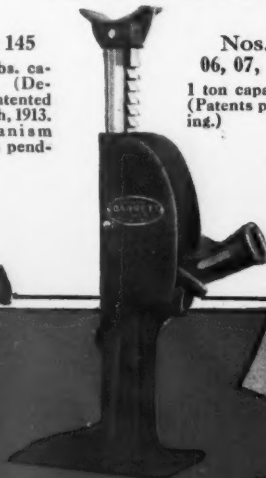
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